CR-165169

APPLICATIONS TECHNOLOGY SATELLITE
And
COMMUNICATIONS TECHNOLOGY SATELLITE
USER EXPERIMENTS FOR 1967-1980

REFERENCE BOOK
VOLUME I

Nicholas A. Engler
John F. Nash
Jerry D. Strange

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RESEARCH INSTITUTE
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August 1980
FINAL REPORT

PREPARED FOR:
NASA-LEWIS RESEARCH CENTER
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TABLE OF CONTENTS

VOLUME I

LIST OF ACRONYMS AND ABBREVIATIONS

AAHS - Alaska Area Native Health Service
AASA - American Association of School Administrators
A/C - Aircraft
AEC - Atomic Energy Commission
AERO SAT - Aeronautical Satellite Program
AESP - Appalachian Education Satellite Project
AFCRL - Air Force Cambridge Research Laboratories
AGREE - Advance Ground Receiving Equipment Experiment
AHA - American Hospital Association
AID - Agency for International Development
AII - Allied Industries, Inc.
ALC - American Lutheran Church
ALFE - Alaska Feed Experiment
ALOHA - Experimental UHF Radio Packet Switched Computer
ALVA - Alaska/Veterans Administration
AMA - American Medical Association
APT - Automatic Picture Transmission
ARC - Appalachian Regional Commission (also Ames Research Center/NASA)
ARINC - Aeronautical Radio Incorporated
ARPANET - Advanced Research Project Agency Computer Network Satellite System
ASTP - Apollo Soyuz Test Project
ATC - Air Traffic Control
ATS - Applications Technology Satellite
BBC - British Broadcasting Corporation
BOLD - Basic Oral Language Development
BOMEX - Barbados Oceanographic Meteorological Experiment
CAI - Computer Aided Instruction
CNAE- Comisso Nacional De Atividados Espaciais
C/O - Check Out
COMSAT - Communications Satellite Corporation
CPB - Corporation for Public Broadcasting
CRC - Communication Research Center (ANADA)
CRT - Cathode Ray Tube
CTS - Communications Technology Satellite
CW - Continuous Wave
DCP - Data Collection Platform
DEA - Drug Enforcement Agency
DHEW - Department of Health, Education, and Welfare
DICE - Digitally Implemented Communications Experiment
DISP - Department of Interior Satellite Project
DOC - Department of Commerce
DOD - Department of Defense
DOI - Department of Interior
DOT - Department of Transportation
DRI - Desert Research Institute
ECG - Electrocardiogram
ERDA - Energy Research Development Agency- now (DOE) Department of Energy
ERP - Effective Radiated Power
ESA - European Space Agency
ESSA - Environmental Science Service Administration

ESTEC - Centre Europeen Rechreche Et De Technologie Spatiaile
ETV - Education Television
EVM - Earth Viewing Module
FAA - Federal Aviation Administration
FDMA - Frequency Division Multiple Access
FLTAC - Fleet Analysis Center (Navy)
FM - Frequency Modulation
FSK - Frequency Shift Keying
FSU - Florida State University
GE - General Electric Corporation
GEOS - Geosynchronous Experimental Observation Satellite
GHz - Gigahertz
GMT - Greenwich Mean Time
GOES - Geostationary Operational Environmental Satellite
GSFC - Goddard Space Flight Center
GTE - General Telephone and Electronics
HET - Health/Education Telecommunications
HEW - Department of Health, Education and Welfare
HF - High Frequency
IEEE - Institute of Electrical and Electronic Engineers
IHADRAS - Interferometer High-Speed Data Rate Acquisition System
IHETS - Indiana Higher Education Telecommunications System
IHS - Indian Health Service
ISOS - International Southern Ocean Studies
ITT - International Telephone and Telegraph
JCET - Joint Council on Educational Telecommunication
KHz - Kilo Hertz
KTUH - Radio Station
KUAC - (NPR-National Public Radio) Radio Station in Alaska
KVZK - Public Broadcasting Television in Samoa
LeRC - Lewis Research Center (also LRC)
LHC - Lister Hill Center
MARAD - Maritime Administration
MARSCAN - Maritime Satellite Communication and Navigation
MATE - Mobile Analysis and Telecommunications Experiments
MCC - Maritime Coordination Center
MEDLINE - Medical Information Retrieval System
MENEHUNE - Central Communication Processor for the ALOHA System
MHz - Mega Hertz
MMW - Millimeter Waves
MOT - Ministry of Transportation (Canada)
MSHC - Mountain States Health Care
MSSCC - Multicolor Spin Scan Cloud Camera
NAFEC - National Aviation Facilities Experimental Center
NASA - National Aeronautics and Space Administration
NBC - National Broadcasting Company
NBS - National Bureau of Standards
NCAR - National Center for Atmospheric Research
NCAST - Nursing Child Assessment Satellite Training
NCER - Northern Center for Educational Research
NEA - National Education Association
NESS - National Environment Satellite Service
NHK - Nippon Hoso Kyokai
NIAID - National Institute of Allergy and Infectious Diseases
NIH - National Institute of Health
NLM - National Library of Medicine

NOAA - National Oceanic and Atmospheric Administration
NORPAX - North Pacific Experiment
NPR - National Public Radio
NRL - Naval Research Laboratory
NSF - National Science Foundation
NSTL - National Space Technology Laboratories
OECA - Ontario Education Communications Authority
ONR - Office of Naval Research
OPLE - Omega Position Location Experiment
OSU - Ohio State University
OT - Office of Telecommunications
PCM - Pulse Code Modulation
PDM - Pulse Duration Modulation
PEACESAT - Pan-Pacific Education and Communications Experiments by Satellite
PET - Portable Earth Terminal
PLACE - Position Location and Aircraft Communication Equipment
P/N - Phase Difference Navigation
PRG - Project Office Goddard
PRJ - Project Office Headquarters
PSK - Phase Shift Keying
PSSC - Public Service Satellite Consortium
RCA - Radio Corporation of America
RF - Radio Frequency
RMS - Root Mean Square
RRL - Radio Research Laboratory
R/V - Research Vessel
SALINET - Satellite Library Information Network
SAMSO - Space and Missile Systems Office
SAO - Smithsonian Astronomical Observatory
SAPPSAC - Spacecraft Altitude Precision Pointing and Showing Adaptive Control
SAR - Search and Rescue
SBC - Southern Baptist Convention
S/C - Satellite
SECA - Southern Educational Communications Association
SHF - Super High Frequency
SITE - Satellite Instructional Television Experiment (India)
SSB - Single Sideband
SSCC - Spin Scan Cloud Camera
SSRA - Spread Spectrum Random Access
TDRE - Tracking and Data Relay Experiment
TEAM - Televised Education Applied to Montana
TET - Transportable Earth Terminal
TOT - Terminal of Tomorrow
TRUST - Television Relay Using Small Terminals
TSC - Transportation System Center
TTY - Teletype
TV - Television
TWT - Traveling Wave Tube
UA - University of Alaska
UCLA - University of California at Los Angeles
UDRI - University of Dayton Research Institute

UF - ATS/CTS User Form
UHF - Ultrahigh Frequency
USAF - United States Air Force
USASCA - United States Army Signal Communications Agency
USCG - United States Coast Guard
USNS - Nasa Ship
USP - University of the South Pacific
UW - University of Washington
UWI - University of the West Indies
VA - Veterans Administration
VERB - Victor Electrowriter Remote Blackboard
VHF - Very High Frequency
VIDAC - A Westinghouse system for compressing audio-visual signals
VLBI - Very Long Baseline Interferometry
VLF - Very Low Frequency
VPI - Virginia Polytechnic Institute
WAMI - Washington, Alaska, Montana, and Idaho Medical Programs
WARC - World Administration Radio Conference
WEFAX - Weather Facsimile Experiment
WHOI - Woods Hole Oceanographic Institute
WMVS - Television Station Milwaukee, Wisconsin

SECTION 1
THE ATS/CTS SATELLITE PROGRAMS

1.1 INTRODUCTION

In the twenty odd years since Sputnik was launched, the artificial satellite has been transformed from a scientific curiosity into a valuable communication tool for government and commercial applications. The spectacular growth in satellite communications is reflected in the fact that over two thousand satellites have been placed in orbit since 1958. One reason for this growth was the entrance of the private sector into satellite communications, an event that was made possible by the passage of the Communications Satellite Act in 1962. This act allowed the private sector to plan, construct and operate commercial communications satellite systems and in this way helped to accelerate the transfer of space communications technology from Government control to the private sector for development.

The successful Applications Technology Satellite (ATS) program and related research efforts by the National Aeronautics and Space Administration (NASA) are example of Government efforts to make the benefits of space communications more accessible to the private sector. The first Applications Technology Satellite (ATS-1) was placed in orbit in December 1966. Five additional satellites have been launched since then, with ATS-3, 5 and 6 achieving synchronous orbit. NASA also launched the Communications Technology Satellite (CTS) in 1976 as a joint effort between the United States and Canada. Corporations, universities, foreign

governments, Government agencies, and other institutions have eagerly responded to the opportunity to use these satellites to perform communication experiments. To date, hundreds of experiments have been performed by the private sector using one or more of the Communication satellites. Though each experiment used the satellite as a communication tool, the purpose and objective of the experiments covers an extremely wide spectrum. The variety of uses made of the satellites is important to the Government for their future planning of communications satellite programs and to a future satellite user. It is important, therefore, to catalog these experiments so that the information can be easily retrieved.

This report catalogs the information for all available user experiments and is the last report to be published under this contract. Two previous reports have been published under this contract in this topic. They are: Engler, N. A., J. D. Strange, and G. F. Hein, "Compendium of Applications Technology Satellite User Experiments, 1967-73." August 1976, University of Dayton Research Institute, Dayton, Ohio 45469, Technical Report, 77 X 70 237 (NTIS N77-30155); and Engler, N. A., J. F. Nash, J. D. Strange "Continuation of the Compendium of Applications Technology Satellite and Communications Technology Satellite User Experiments 1967-77 Volume I. "May 1978, University of Dayton Research Institute, 300 College Park, Dayton, Ohio 45469, Technical Report, CR-135416, UDR-TR-78-67 (NTIS N78-31141). Thus, this report is somewhat redundant to the first two but can stand alone as a complete source document.

Each section of the report is preceded by a description of the contents of the section and its intended use.

1.2 SATELLITE CHARACTERISTICS

This section contains a brief description of the satellites involved in the ATS and CTS programs. An appreciation of the technical capabilities of the satellites is helpful in understanding how each can be used for a particular experiment.

1.2.1 ATS-1

The ATS-1 spacecraft was placed in synchronous orbit on December 6, 1966 and is still in operation. The ATS-1 is a cylindrical, spin-stabilized spacecraft with solar cells around its periphery. The communications antennas extend from one end of the cylinder and the spacecraft payload is mounted interior to the walls of the cylinder. ATS-1 is depicted in Figure 1.1.

Since being placed in orbit over the Pacific Ocean, this satellite has performed an astonishing variety of services. It is impractical to describe all of the services performed by the satellite but an extensive list is given in Section 2. Some of the more important ones are described briefly in this section.

- Television pictures were relayed via VHF. Events such as the first Apollo splashdown, the 1968 Olympics, and President Johnson's visit to Australia were relayed via ATS-1.
- Cloud cover pictures, weather charts, and special messages have been transmitted since 1968 as part of the WEFAX experiment.
- The PEACESAT (Pan Pacific Education and the Communication Experiments) project of the University of Hawaii uses this satellite to

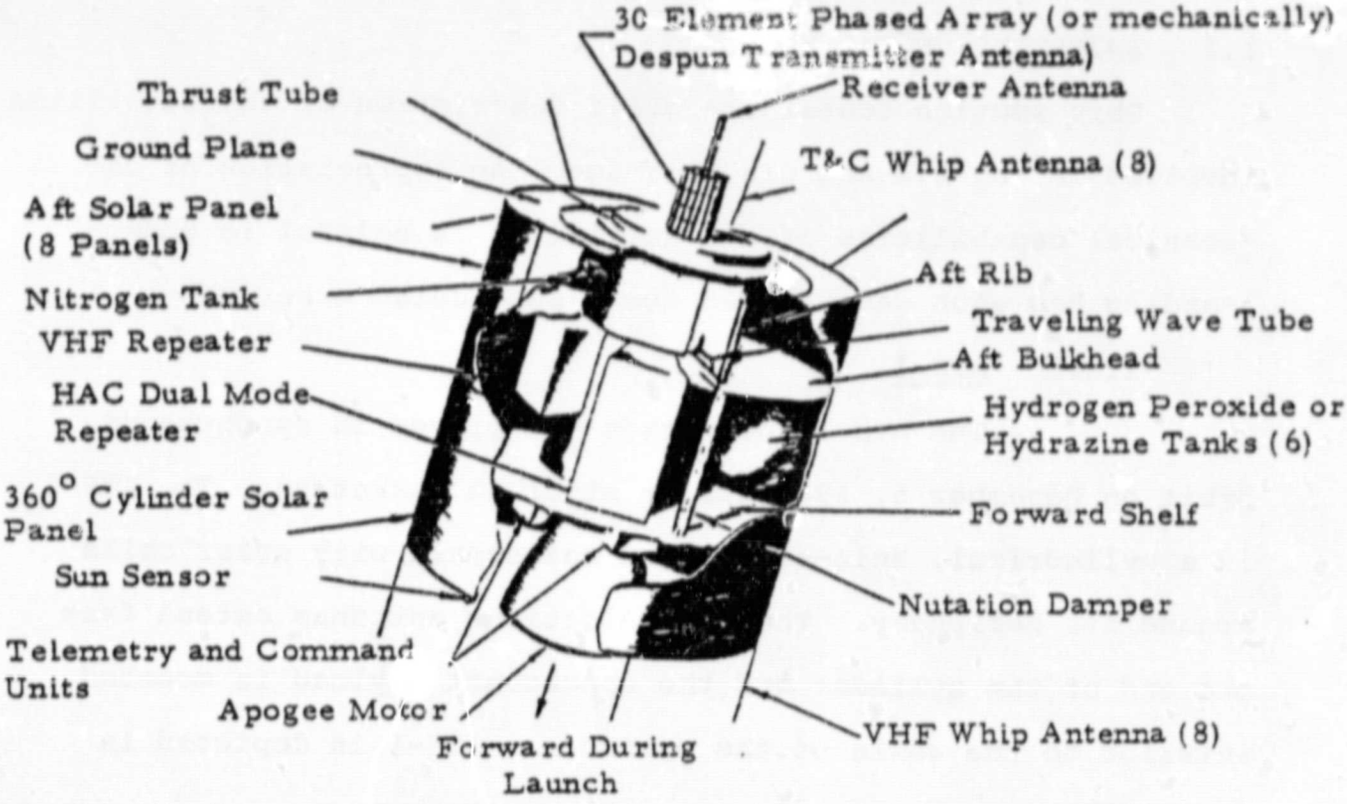

Figure 1.1. Spin Stabilized Spacecraft ATS-1 and 3 with Electronically Despun Antenna

exchange educational, medical and community services in the Pacific. PEACESAT uses two-way voice communications for all exchanges.

- State of Alaska/Department of Health, Education and Welfare (HEW) experiment. Three experimental projects are being conducted under the direction of the Alaskan Government; an educational communications experiment, a biomedical communications experiment, and a communications networking experiment. The first two are funded by HEW and the third, the networking experiment, is funded by the State of Alaska.

- The Office of Education and National Institute of Health, both of HEW, are experimenting with satellite relay over VHF of educational programs to the teacher in the classroom and the transmission and reception of medical data.

- The State of Alaska is experimenting with satellite relay of National Public Radio programs to member stations and testing kinds of equipment required to determine minimum ground station costs. A related purpose is to examine the effect of interference to reception from the Auroral zone.

- Numerous maritime communication experiments have been performed. These experiments involved the transmission of voice, teletype, facsimile and slow scan video between ships and ground stations.

1.2.2 ATS-3

The ATS-3 spacecraft was placed in orbit on November 6, 1967 and is still in operation. After a near-perfect launch, it was placed in station over the Atlantic Ocean. The physical dimensions and method of stabilization of this satellite are very similar to those of ATS-1. Some of the notable achievements of this satellite are:

- The first ground-to-satellite-to-airplane two-way communications link took place over the

Atlantic Ocean on November 21, 1967 and involved a regularly scheduled Pan American flight.

- The first color photography of the Earth from a satellite was obtained from the multicolor spin-scan camera.
- Interrogation of equipment on ocean buoys was accomplished through the ATS-3 by several different experimenters.
- One-way time dissemination experiments were conducted between fixed and mobile stations. Time and frequency signals were broadcast from the National Bureau of Standards in Boulder, Colorado.

1.2.3 ATS-5

ATS-5, which was launched on August 12, 1969, is depicted in Figure 1.2. Unfortunately, due to some anomalies during launch, the satellite ended up in an unplanned spin. Because of this, many of the user experiments could not be performed. Some of those that were performed are listed below.

- L-band ranging and position location experiments demonstrated the ability to obtain useful range measurements using PM tone modulation at L-band carrier frequencies. Tests were made using both stationary and fixed platforms.
- The Maritime Administration (MARAD) project conducted a successful tests of real-time high speed (100 wpm) teletype using standard equipment. Transmission was between Mojave, California and the ship USS Manhattan.
- The FAA/Boeing communications experiment at L-band from ATS-5 to an aircraft. This experiment involved both measurements of multipath effects and tone ranging.
- A millimeter wave experiment was conducted by Westinghouse to determine the propagation correlation with rain, fading, and weather 15.3 GHz down link.

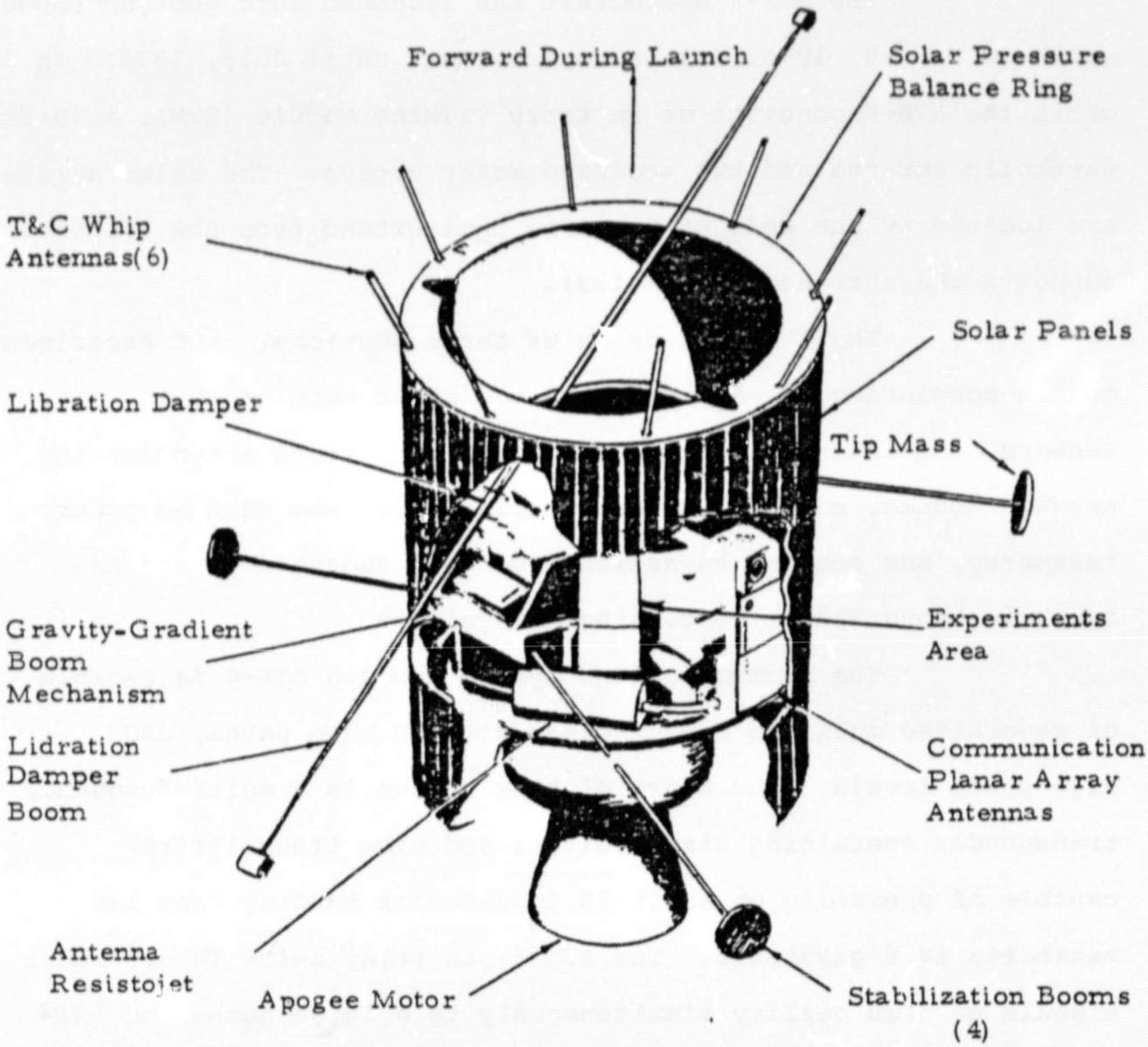

Figure 1.2. Gravity-Gradient Spacecraft ATS-5

1.2.4 ATS-6

The ATS-6 spacecraft was launched into geosynchronous orbit on May 30, 1974, and was operational until July, 1979. In orbit the ATS-6 consists of an Earth Viewing Module (EVM), a 30-ft parabolic antenna and two separate solar arrays. The solar arrays are located at the ends of two arms that extend from the hub that supports the antenna (Figure 1.3).

The EVM is made up of three sections: the experiment module consisting of earth-viewing equipment such as earth sensors, the interferometer, and smaller aperature antennas; the service module, containing housekeeping equipment such as power, telemetry, and command an attitude control subsystems; and the communications module containing RF equipment.

The communications system onboard ATS-6 is capable of generating multiple frequencies, diverse beam paths, and high-power levels. The heart of this system is a multi-frequency transponder containing six receivers and nine transmitters capable of operating on about 20 frequencies ranging from 136 megahertz to 6 gigahertz. The ATS-6 can relay color TV and other signals of high quality simultaneously to a large number of low-power ground stations over a large geographic area.

Some of the important experiments performed on the ATS-6 are noted here for reference.

- The Position Location and Aircraft Communications Experiment (PLACE) is an experiment to obtain engineering data and practical experience for determining the operational feasibility of air traffic control and maritime satellite systems using L-band.

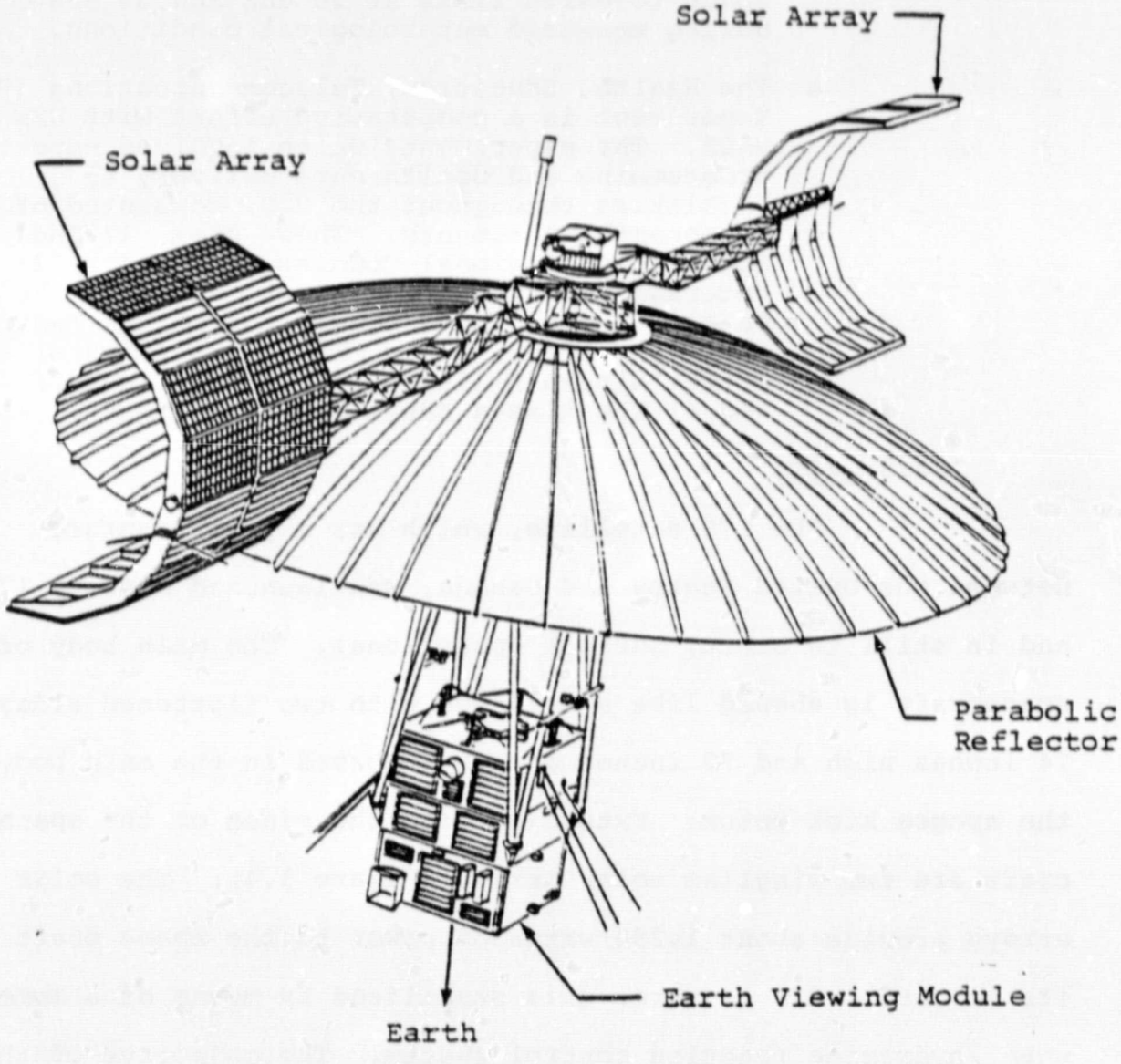

Figure 1.3. ATS-6 Configuration.

- The SITE Project was a joint effort between NASA and the Government of India. This experiment investigated the potential value of satellite instructional television for mass communication in developing countries.

- The Millimeter Wave Propagation Experiment to evaluate the propagation characteristics of space-to-earth links at 20 GHz and 30 GHz during measured meterological conditions.

- The Health, Education, Telecommunications (HET) Experiment is a cooperative effort with HEW and NASA. The experiments which involved educational programming and health care delivery to facilities throughout the U.S. consisted of six component experiments. These are: 1) The Appalachian Regional Commission Project; 2) The Veterans Administration Experiments; 3) The Satellite Technology Demonstration; 4) Washington, Alaska, Montana, Idaho (WAMI) Experiments; 5) The Alaska Health Services Experiments; and 6) The Alaska Education Experiment.

1.2.5 CTS

The CTS satellite, which was a joint venture between the United States and Canada, was launched January 17, 1976 and is still in orbit, but not operational. "The main body of the spacecraft is shaped like a cylinder with two flattened sides, 74 inches high and 72 inches across."* Housed in the main body is the apogee kick motor. Extending from the sides of the spacecraft are two winglike solar arrays (Figure 1.4). The solar arrays provide about 1,250 watts of power to the space craft and its payload. CTS is three-axis stabilized by means of a momentum wheel/hydrazine reaction control system. The objective of the CTS program is to demonstrate the capability of a satellite carrying high-power, 200 watt, transmitting equipment operating at high frequencies to broadcast television and voice to small, low-power ground stations in remote areas. About 40 experiments

*See TRW space log 1976, page 20.

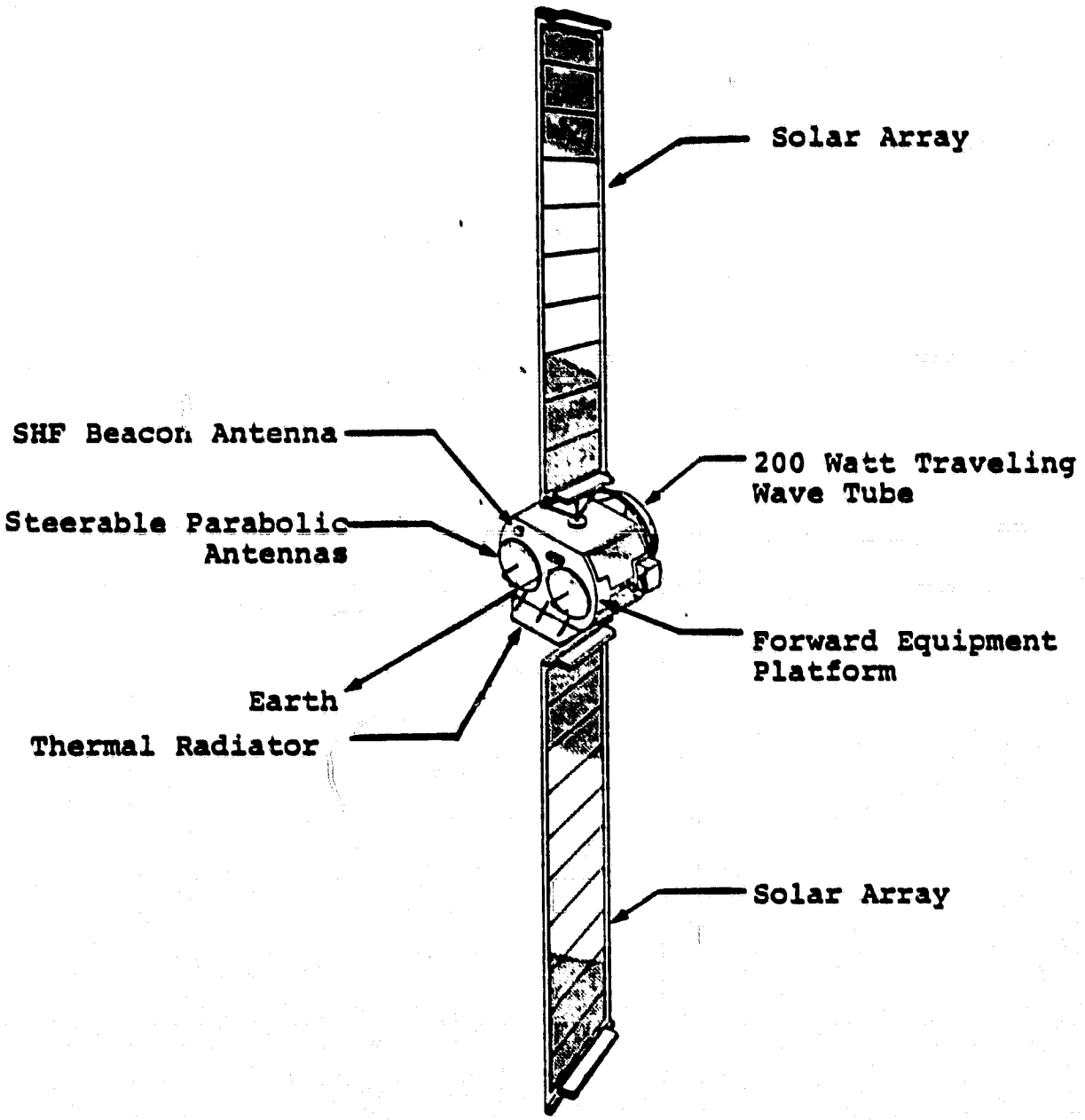

Figure 1.4. CTS Configuration.

will use CTS to demonstrate a variety of practical applications for such a capability. The satellite is also capable of transmitting through two 20 watt units. The system includes two steerable parabolic antennas. Some of the notable user experiments performed on CTS are listed in this section.

- College curriculum sharing between Stanford University (U.S.) and Carlton University (Carlton). Engineering classes and seminars were televised. Experiment featured realtime digital video compression with error correction coding to reduce bandwidth and power requirements.

- The Satellite Library Information Network (SALINET) Experiment involved training programs throughout the Rocky Mountain area using two-way communications.

- Telecommunications in lieu of transportation was investigated by Westinghouse. This study investigated the possibility of using satellite communications to conduct business within large geographically diverse industrial organizations. Terminals are located in Baltimore, Maryland and Lima, Ohio.

- The University of Toronto has used CTS in an experiment to test the use of geostationary communication satellites for real-time correlation of broad-band data output from widely separated radio telescopes. Telescopes at Algonquin Park, Ontario, Green Bank, West Virginia, and Owens Valley, California were involved.

SECTION 2
ATS/CTS EXPERIMENT DATA FORMS

Each ATS/CTS experiment is summarized here on an ATS/CTS Experiment Data Form. The basic format was taken from a form used by GSFC to summarize user experiments. The ATS-1, 3, and 5 experiment data forms presented here are, except for minor editing changes, taken directly from GSFC forms and start with experiment #102 and end with #344. ATS-6 experiment data forms were generated from data received from GSFC and from our own data base and start with #601 and end with #677. The United States CTS experiments are summarized in Section 2.3 and start with CTS-1 and end with CTS-35. Data for the CTS experiments were taken from the user meeting reports generated by Lewis Research Center. Experiment Data Forms for the Canadian CTS experiments are not included in this report. Information about the Canadian CTS Experiment can be obtained from Department of Communication, Commonwealth Research Center, Shirley Bay, Highway 17B, West of Ottawa.

The data given on these forms are the basic data of the experiment. Each form gives the initial purpose and objective of the experiment and also gives some information regarding the experimenter and sponsor. The data at the bottom of the form are auxiliary information that will aid the reader to find reports concerning the outcome of the experiment and to identify similar experiments.

SECTION 2.1

ATS-1, 3, AND 5 EXPERIMENT DATA FORMS

ATS/CTS EXPERIMENT DATA

Experiment No. 102

Experiment Title X-Ray Transmission

Begin Date 16 Nov 71 Completion 16 Nov 71

Experimenter Duke University Medical Center

Geographic Location Eastern U.S.

Satellite ID ATS-1 Frequency C-Band Mode FT

Category of Experiment Health Services/Data Transmission

Experiment Description

On November 15, 1975 medical fluoroscopic information, previously videotaped at Duke Hospital, was transmitted for 60 minutes from Rosman, N.C. to ATS-1 and back; the satellite was then at about 150°W. The transmitted information had been obtained with conventional image-intensification systems using 525-line vidicon cameras and one-inch recorders. The signals were used to frequency-modulate a 6.2 GHz carrier radiated by a 1 kW transmitter working into the Rosman II dish. The "up" and "down" images were watched on adjacent monitors and the "down" image was videotaped as received. The transmitted and received images were indistinguishable to the naked eye and in photographed replays of the tapes, showing that the information capacity of the satellite link is adequate for fluoroscopic transmission at normal frame rates.

Radiographic (static) images obtained by viewing back-lighted radiographs with a Vidicon were also transmitted. These images were diagnostically unsatisfactory, but this was due to the poor quality of the image fed to the transmitter, rather than to inadequacies in the transmission channel.

Report Accession Nos. 16, 55, 298

User Form Nos. 002

Similar Experiment Nos.

Primary Keywords: Health Services, Data Transmission, X-Ray

Secondary Keywords: Fluoroscopy, Radiology, North Carolina, Health Services Research

ATS/CTS EXPERIMENT DATA

Experiment No. 107

Experiment Title SPEC SHF

Begin Date 1968 Completion 1970

Experimenter General Electric Co.

Geographic Location Atlantic Ocean, Pacific Ocean

Satellite ID ATS-1 & 3 Frequency C-Band Mode FT

Category of Experiment Communications/Support

Experiment Description

Portable communication satellite ground transmitter systems, developed by General Electric, were tested.

The equipment, based on the SAGS (Q.V.) fifteen foot folding umbrella antenna and a very-high-power C-band transmitter, was checked out from the G.E. parking lot to the deck of a ship at sea. This equipment or duplicate has been used subsequently for all Apollo splashdowns; ATS-1 and ATS-3 were employed for the link during Apollo's 8-11.

The satellite usage logs indicate that this experiment number was used through December 1975. However, no information could be obtained about the nature of its use or the experimenter involved.

Report Accession Nos. 1, 23

User Form Nos. None

Similar Experiment Nos. 202

Primary Keywords: Communications, Support

Secondary Keywords: Ship to Shore, Atlantic Ocean, Pacific Ocean, Apollo, Ship Terminals, Voice Communication, Transmitter

ATS/CTS EXPERIMENT DATA

Experiment No. 108

Experiment Title Launch Support

Begin Date 1969 Completion April 1978

Experimenter NASA

Geographic Location U.S.

Satellite ID ATS-1,3,5&6 Frequency _____ Mode _____

Category of Experiment Communications/Support

Experiment Description

All launch support communications requiring satellite capability used this experiment number. Post-launch communications were done under Experiment Number 202.

Report Accession Nos. None

User Form Nos. _____

Similar Experiment Nos. 202

Primary Keywords: Launch Support, Communications

Secondary Keywords: Apollo, Voice

ATS/CTS EXPERIMENT DATA

Experiment No. 183

Experiment Title WEFAX

Begin Date Mar 1969 Completion Open

Experimenter NOAA

Geographic Location World

Satellite ID ATS-1 & 3 Frequency C-Band Mode WBDM

Category of Experiment Meteorology/Satellite Photos

Experiment Description

NOAA uses its own ground station (Wallops Island, Virginia) to perform commanding and data gathering operation with both ATS-1 and 3. The spacecraft (S/C) are used approximately 14 hours per day to obtain spin scan weather pictures of the earth. ATS-1 is stationed over the Pacific Ocean at 149°W longitude and provides coverage of Hawaii, Alaska, and the western portion of the United States, while ATS-3 provides similar coverage of the Atlantic Ocean including western Europe and the eastern coast of the USA.

The weather pictures are analyzed at Suitland, Md., and facsimile pictures are then transmitted via ATS-1 and 3 (at VHF) to several weather stations located in Europe, S. America, N. America, and the S. Pacific (as far west as Japan).

The Spin Scan Cloud Camera (SSCC) weather pictures are used by storm alert centers to follow hurricanes and tornados in near real time, as well as providing valuable data for storm research (such as performed by Dr. T. Fujita, Prof. at the Univ. of Chicago and Verner E. Suomi, of the Univ. of Wisconsin).

Report Accession Nos. 130, 192

User Form Nos. None

Similar Experiment Nos.

Primary Keywords: Meteorology, Photography

Secondary Keywords: Clouds, National Oceanic and Atmospheric Administration (NOAA), Cloud Photography

ATS/CTS EXPERIMENT DATA

Experiment No. 185

Experiment Title VHF A/C

Begin Date January 1967 Completion June 1970

Experimenter ARINC

Geographic Location U.S.

Satellite ID ATS-1&3 Frequency _____ Mode _____

Category of Experiment Aircraft Communications

Experiment Description

These experiments attempted to (1) determine the technical characteristics of an operational satellite VHF air/ground/air communications system designed for voice and data and to (2) verify that the application of satellites to the VHF aeronautical mobile environment is practicable within the state of the art existing in spacecraft and avionic equipment, especially aircraft SATCOM antennas. Satellite-relay communication trials were conducted with scheduled flights on oceanic routes under the typical environmental conditions, using for the first time an aircraft installation designed for the service. In this respect the tests provided the basis for an operational evaluation of the airborne system, the collection of additional scientific data and a demonstration to the aircraft crews and airline officials of the potential service possibilities of an eventual operational system. ARINC acted as the coordinating agency for the airline industry and the supporting organizations' test activities and was responsible for providing experimental data to NASA.

Report Accession Nos. 13, 28, 174, 176, 240, 294, 295

User Form Nos. None

Similar Experiment Nos. 281, 657, 664

Primary Keywords: Aircraft Communications, SATCOM Antennas

Secondary Keywords: Antenna Pattern, Signal Strength, VHF, ATS

ATS/CTS EXPERIMENT DATA

Experiment No. 202

Experiment Title Spacecraft Support

Begin Date April 1969 Completion January 1978

Experimenter NASA

Geographic Location Western Hemisphere

Satellite ID ATS-1 Frequency VHF Mode

Category of Experiment Communications/Support

Experiment Description

NASA determined that a VHF satellite duplex voice link could be maintained from the continental United States to the Apollo recovery forces in mid-Pacific. A transportable transmit and receive station was placed aboard the prime recovery aircraft carrier, and a duplex circuit with companders and multiplexed order-wire were established between the ship and an ATS ground station.

Report Accession Nos. 1, 23

User Form Nos. None

Similar Experiment Nos. 107, 108

Primary Keywords: Communications, Apollo

Secondary Keywords: NASA, Pacific Ocean, Ships

ATS/CTS EXPERIMENT DATA

Experiment No. 205

Experiment Title SSCC

Begin Date Mar 1969 Completion Open

Experimenter NOAA

Geographic Location World

Satellite ID ATS-1 & 3 Frequency C-Band Mode WBDM

Category of Experiment Meteorology/Satellite Photos

Experiment Description

NOAA uses its own ground station (Wallops Island, Virginia) to perform commanding and data gathering operations with both ATS-1 and 3. The spacecraft are used approximately 14 hours per day to obtain spin scan weather pictures of the earth. ATS-1 is stationed over the Pacific Ocean at 149°W longitude and provides coverage of Hawaii, Alaska, and the western portion of the United States, including western Europe and the eastern coast of the USA.

The weather pictures are analyzed at Suitland, Md., and facsimile pictures are then transmitted via ATS-1 and 3 (at VHF) to several weather stations located in Europe, S. America, N. America, and the S. Pacific (as far west as Japan).

The Spin Scan Cloud Camera (SSCC) weather pictures are used by storm alert centers to follow hurricanes and tornados in near real time, as well as providing valuable data for storm research (such as performed by Dr. T. Fujita, Prof. at the Univ. of Chicago and Verner E. Suomi, of the Univ. of Wisconsin).

Report Accession Nos. 69, 70, 107, 109

User Form Nos. 011, 046, 049

Similar Experiment Nos. 210, 211

Primary Keywords: Meteorology, Photography

Secondary Keywords: Spin-Scan Camera, Clouds, Cloud Photography, Cloud Motion, Storms, Hurricane, Tornados, National Oceanic and Atmospheric Administration (NOAA

ATS/CTS EXPERIMENT DATA

Experiment No. 210

Experiment Title MSSCC

Begin Date Mar 1969 Completion January 1976

Experimenter NOAA

Geographic Location World

Satellite ID ATS-1 & 3 Frequency C-Band & VHF Mode WBDM

Category of Experiment Meteorology/Satellite Photos

Experiment Description

NOAA uses its own ground station (Wallops Island, Virginia) to perform command and data gathering operation with both ATS-1 and 3. The spacecraft are used approximately 14 hours per day to obtain spin scan weather pictures of the earth. ATS-1 is stationed over the Pacific Ocean at 149°W longitude and provides coverage of Hawaii, Alaska, and the western portion of the United States, while ATS-3 provides similar coverage of the Atlantic Ocean including western Europe and the eastern coast of the USA.

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Report Accession Nos. 69, 70, 107, 109

User Form Nos. 011, 046, 049

Similar Experiment Nos. 205, 211

Primary Keywords: Meteorology, Photography

Secondary Keywords: Spin-Scan Camera, Clouds, Cloud Photography, Cloud Motion, Storms, Hurricane, Tornados, National Oceanic and Atmospheric Administration (NOA

ATS/CTS EXPERIMENT DATA

Experiment No. 211

Experiment Title IDCS

Begin Date November 1967 Completion 1972

Experimenter NOAA

Geographic Location U.S.

Satellite ID ATS 3 Frequency _____ Mode _____

Category of Experiment Meteorology/Satellite Photos

Experiment Description

The Image Dissector Camera System was first flown on ATS-3 to provide the scientific community with additional information about the earth and its environment. However, its prime technical objective was to demonstrate and discover any unknown limitations of the image dissector camera (IDC). The (IDC) operation was electronic except for a protective shutter that closed over the face of the image dissector tube when the camera was not operating. The camera contained the image dissector, a sun sensor for spin rate, a nutation sensor, the electronics necessary to synchronize camera timing and operation with spacecraft spin, and to retain proper phasing to enable earth viewing once the initial phasing had been commanded from the ground.

The IDC System performed well and produced a large output of useful meteorological pictures as well as pictures defining ATS-3 spacecraft motion. This system provided reliable service with a minimum of ground station complexity and has shown excellent potential for future space applications.

Report Accession Nos. 765

User Form Nos. None

Similar Experiment Nos. 205, 210

Primary Keywords: Meteorology, Satellite Photos

Secondary Keywords: Image Dissector, Camera, Clouds, National Oceanic and Atmospheric Administration (NOAA)

ATS/CTS EXPERIMENT DATA

Experiment No. 225

Experiment Title VHF England

Begin Date Aug 70 Completion Dec 70

Experimenter United Kingdom

Geographic Location Atlantic Ocean, United Kingdom (England)

Satellite ID ATS-3 Frequency VHF Mode N/A

Category of Experiment Maritime Communications

Experiment Description

Personnel from the United Kingdom Post Office performed tests of speech, teleprinter, facsimile and selective calling transmissions using ATS-3. The tests were carried out between the SS ATLANTIC CAUSEWAY, the Post Office Coast radio station at Burham-on-the-Sea, England, and NASA/Mojave Station. Both FM and double side-band suppressed carrier techniques were used.

Report Accession Nos. 1, 28, 33

User Form Nos. 028, 045

Similar Experiment Nos.

Primary Keywords: Maritime Communication, Voice Communication

Secondary Keywords: Teletype, Facsimile, Ship to Shore, Ships, Atlantic Ocean, United Kingdom, England, Ionosphere

ATS/CTS EXPERIMENT DATA

Experiment No. 226

Experiment Title VHF Netherland

Begin Date Aug 70 Completion Feb 71

Experimenter Netherlands

Geographic Location Atlantic Ocean, Netherlands

Satellite ID ATS-3 Frequency VHF Mode N/A

Category of Experiment Maritime Communications

Experiment Description

VHF communications tests via the ATS-3 satellite were performed from August, 1970, until February, 1971, between two ships, the SS "Nieuw Amsterdam" and the SS "Atlantic Crown", and NASA earth station Mojave and an experimental earth station located in Kootwijk, Netherlands.

During the tests the Nieuw Amsterdam was partly operating between Rotterdam and New York and partly between New York and the Caribbean Sea; the Atlantic Crown was operating between Rotterdam and New York. The tests performed included measuring the performance characteristics of radio-teletype (multichannel FSK), voice communications, selcal and facsimile transmissions (narrowband FM and SSB) between an earth station and a ship and vice versa.

Report Accession Nos. 48, 264

User Form Nos. None

Similar Experiment Nos.

Primary Keywords: Maritime Communication, Voice Communication

Secondary Keywords: Atlantic Ocean, Netherlands, Ships, SS Nieuw Amsterdam, SS Atlantic Crown, Teletype, Facsimile, Ship to Shore

ATS/CTS EXPERIMENT DATA

Experiment No. 227

Experiment Title HET - VHF Alaska

Begin Date Jun 1969 Completion Open

Experimenter State of Alaska

Geographic Location Alaska

Satellite ID ATS-1 Frequency VHF Mode N/A

Category of Experiment Education/Communication/Health Services/ Data Transmission

Experiment Description

The Alaskan experiment has two segments: Medical and Educational

The Medical Experiment is to evaluate a system of medical care delivered by satellite. A doctor in the regional center contacts village health aides via satellite radio on a scheduled basis. During contact periods, the health aides describe symptoms and conditions of persons with possible health problems. The doctor evaluates the descriptions and prescribes treatment and care procedures.

The Education Programs include information exchanges between communities, discussions of matter of interest to Alaska natives and school programs which include regularly scheduled teacher conferences. These conferences enable teachers in remote schools to exchange information and discuss educational and administrative matters.

Another experimental program in which Alaska is a participant, is the Pan Pacific Seminar. The principal investigator in this experiment is the National Education Association. This program is a monthly conference of educators in Alaska, Hawaii, the Appalachian states, and 9 South Pacific Islands. Two to four Alaska sites usually participate in these programs. An achieved technical goal of this experiment has been the use of double-hopping through ATS-1 and ATS-3 to provide communications between the Eastern United States, Alaska, and the South Pacific.

Report Accession Nos. 34, 49, 52, 61, 128, 148, 276, 286, 508, 511, 572, 573, 579, 690, 751

User Form Nos. 044

Similar Experiment Nos.

Primary Keywords: Education, Communications, Health Services

Secondary Keywords: Primary Education, Teacher Education, Medical Education, Adult Education, Alaska, Medical Communications, Consultation, Telemedicine, Conferences, Teleconferencing, Teleconsultation, Telediagnosis System, Medical Records, Libraries, Indian Health Service, Telecommunication, Data Transmission, Information Systems

ATS/CTS EXPERIMENT DATA

Experiment No. 228

Experiment Title VHF GE

Begin Date 2/69 Completion 8/71

Experimenter GSFC/ONR - General Electric Co.

Geographic Location Bermuda

Satellite ID ATS-1 & 3 Frequency VHF Mode -

Category of Experiment Data Transmission/Buoy Interrogation

Experiment Description

Sea Robin was a joint NASA/Navy ONR/General Electric Co. experiment in which:

The buoy was interrogated with its individual address through the satellite and it responded with a verification of its address, a signal from which its location could be determined, and a readout of its sensor data in digital form. Under best signal conditions of the experiment, the digital error rate was 10 at 2.4414 kbs. Extrapolation from the 2.4414 kbs rate based on laboratory tests with random noise interference, suggests bit error rates at 305 b/s will be as low as 10^{-9}.

Line-of-position measurements ± 1 nautical mile, 1 sigma of the latitude of the buoy mooring were accomplished with an RF transmission energy of less than 50 watt-seconds per measurement. Largest deviations of any of the 759 determinations were 3.25 nautical miles north and 2.75 nautical miles south of the mooring latitude.

Equipment on the buoy consisted of a small mobile radio-receiver, a solid-state RF power amplifier of 120 watts output, and a solid state "tone-code" ranging responder.

In a later extension of this experiment, VHF tone ranging was used to determine the location of a mobile terminal aboard the USS Vanguard. Simultaneous ranging to ATS-1 and 3 was performed, as well as single spacecraft ranging.

Report Accession Nos. 23

User Form Nos. None

Similar Experiment Nos. 233, 234

Primary Keywords: Data Transmission, Buoys

Secondary Keywords: Goddard Space Flight Center (GSFC), National Aeronautics and Space Administration (NASA), Bermuda, Tone Ranging, General Electric, Sea Robin

ATS/CTS EXPERIMENT DATA

Experiment No. 230

Experiment Title VHF Barium Ion Experiment

Begin Date 3/71 Completion 9/71

Experimenter NASA/Wallops & Max Planck Institute

Geographic Location NC, Peru, Chile, Canada

Satellite ID ATS-3 Frequency Center Mode -

Category of Experiment Communications/Support

Experiment Description

ATS satellite provided VHF communication support from Wallops Island to Arequipa, Peru; LaSerena, Chile, and Great Whale, Canada, via Rosman Ground Station. Operations started in March of 1971 and the payload was launched and the test successfully completed in September 1971.

The objective of the NASA/MPE Barium Ion Cloud project is to study the broad features of electric and magnetic fields in the outer radiation belt by optical investigation of the behavior of a barium ion cloud released at several earth radii altitude.

Data from the ionized cloud observation was supplemented with geophysical data recorded at the base of the magnetic field line on which the cloud is released (Great Whale Geophysical Station, Canada, and Byrd Station, Antarctica) combined with data from geophysical satellites experiments.

Report Accession Nos. None

User Form Nos. None

Similar Experiment Nos.

Primary Keywords: Communications, Voice Communication

Secondary Keywords: Barium Vapor, NASA, Max Planck Institute, Peru, Chile, Canada, North Carolina

ATS/CTS EXPERIMENT DATA

Experiment No. 231

Experiment Title VHF MSFN Propagation

Begin Date 9/70 Completion 2/71

Experimenter MSFN Network

Geographic Location Western Hemisphere

Satellite ID ATS-3 Frequency VHF Mode -

Category of Experiment Data Transmission

Experiment Description
VHF propagation studies were conducted using the ATS-3 VHF repeater. ROSMAN or MOJAVE transmitted a test signal and ROSMAN, MOJAVE, MSFN Canary and Ascension received and recorded propagation data. The test was run for 4 hours per day over a six day period to cover 24 hours of propagation data.

Report Accession Nos. None

User Form Nos. None

Similar Experiment Nos. 283

Primary Keywords: Data Transmission, Test Equipment

Secondary Keywords: VHF, Propagation

ATS/CTS EXPERIMENT DATA

Experiment No. 232

Experiment Title VHF EG&G

Begin Date 1968 Completion 1972

Experimenter EG&G, Los Alamos Scientific Laboratories

Geographic Location Western Hemisphere

Satellite ID ATS-1 Frequency _____ Mode _____

Category of Experiment Aircraft Communications

Experiment Description

The September 1971 Conjugate Auroral Measurements Studies (and those of 1968 and 1970) were conducted by the Los Alamos Scientific Laboratories (LASL), with support from EG&G. The program used two Air Force Systems Command NC-135 aircraft that were based at Kirtland AFB, New Mexico. Aircraft No. 60-370 would depart from Elmendorf Air Force Base, Anchorage, Alaska, fly to its initial conjugate point, then proceed north along a prescribed conjugate point flight path for approximately three hours. Aircraft No. 60-369 would depart from Christchurch, New Zealand, to reach its conjugate point flight path coincident with the northern aircraft. The aircraft would maintain geomagnetic conjugacy according to the mission profile by communicating with each other via satellite. The importance of the satellite communications system stemmed from this need for the maintenance of bi-hemispheric spatial and temporal conjugacy, and from the need for later coordination in order to compare system parameters and live auroral data.

In addition to the airborne systems, a ground station was established at Kirtland AFB, New Mexico. The intent of this ground station was to assist in relaying positional information should aircraft-to-aircraft communications not be achieved. The ground station would also act as a "home base" contact for the transfer of information, messages, and other pertinent data.

The University of Alaska gave program personnel permission to use its ground station at College, Alaska, to supplement the Kirtland-based station.

Report Accession Nos. 1, 20, 21

User Form Nos. None

Similar Experiment Nos. 281

Primary Keywords: Aircraft Communications, Da[illegible]smission

Secondary Keywords: Voice Communication, Conju[illegible]e Auroral Measurements

ATS/CTS EXPERIMENT DATA

Experiment No. 233

Experiment Title VHF Norway

Begin Date 11/70 Completion 2/71

Experimenter Norwegian Council for Scientific & Industrial Research

Geographic Location Norway

Satellite ID ATS-3 Frequency VHF Mode -

Category of Experiment Data Transmission/Buoy Interrogation

Experiment Description

In this experiment, the Norwegian Institute of Meteorology used the ATS-3 to relay meteorological and oceanographic data from an instrumented buoy (SCOMB-1) to Oslo, Norway. Buoy data were in a PCM format and include meteorological, housekeeping, and position information. The elevation angle from the buoy to the satellite was approximately 9° and from the ground stations 7°. Data were successfully transmitted from the buoy to Oslo. Command transmissions from ground station to buoy were marginal at best.

Report Accession Nos. 28, 29, 247

User Form Nos. None

Similar Experiment Nos. 228

Primary Keywords: Meteorology, Data Transmission

Secondary Keywords: Norway, VHF

ATS/CTS EXPERIMENT DATA

Experiment No. 234

Experiment Title GE/FAA

Begin Date November 1969 Completion June 1971

Experimenter General Electric Co.

Geographic Location North Atlantic

Satellite ID ATS-1&3 Frequency _____ Mode _____

Category of Experiment Ranging and Position Fixing

Experiment Description

Ranging and position fixing tests were conducted during this period using ground reference transponders at Gander, Newfoundland and Schenectady, New York. Position fixing for an aircraft in flight over a short period of time was demonstrated on the first leg of a North Atlantic test flight. A DC-6 aircraft of the Federal Aviation Administration was tracked by two-satellite ranging and also by precision radar as it flew from Atlantic City enroute to Rome, New York. Sixty-three of seventy-nine satellite fixes agreed with the radar fixes within one nautical mile. When the aircraft was on the ground at Rome, five satellite fixes were within 2400 and 5400 feet of the tower in a direction between east-southeast and south-southeast. It was later determined that the aircraft was on a taxiway approximately 3500 feet southeast of the tower when the fixes were made.

Long-time accuracy for a transponder aboard a ship was tested with a unit on the Coast Guard Cutter Rush. The equipment time delay of the ship-borne unit was calibrated when the ship was underway in the Bay of Farallons, California on May 5. On May 10 a fix was made when the ship was docked at Alameda Naval Station and was correct within a fraction of a nautical mile. Tests continued until July 10 when the ship returned to San Francisco.

Report Accession Nos. 116

User Form Nos. None

Similar Experiment Nos. 228

Primary Keywords: Ranging, Position Fixing

Secondary Keywords: Precision Radar, Aircraft, Ship

ATS/CTS EXPERIMENT DATA

Experiment No. 235

Experiment Title VHF HAWAII - PEACESAT

Begin Date Feb 72 Completion Open

Experimenter University of South Pacific, Univ. of Hawaii

Geographic Location Pacific Ocean, Hawaii

Satellite ID ATS-1 Frequency VHF Mode N/A

Category of Experiment Education/Health Services/Communications/ Data Transmission

Experiment Description

The Pan Pacific Education and Communication Experiments by Satellite (PEACESAT) Project is an international education experiment involving institutions in twelve Pacific Basin nations. The purpose of the project is to experiment with the application of communication technology and new methods of operation designed especially for health, education, and community services.

The experimental approach emphasizes the simultaneous undertaking of demonstrations, equipment development, and long-range planning within a collaborative environment in which expertise is assembled and shared by many users. The focus is on two-way voice communication. Experiments are initiated by users and are geared to the philosophy that communication technology should be responsive to social functions.

Report Accession Nos. 12, 66, 120, 206, 210, 212, 217, 218, 219, 311, 577, 745, 749 , 912

User Form Nos. 055, 056, 057, 058, 2-022

Similar Experiment Nos.

Primary Keywords: Education, Health Services, Communications, Data Transmission

Secondary Keywords:

Teacher Education, Medical Communications, Conferences, Libraries, X-Ray, Electrocardiogram, Facsimile, PEACESAT, University of South Pacific, University of Hawaii, Hawaii, Pacific Ocean

ATS/CTS EXPERIMENT DATA

Experiment No. 236

Experiment Title VHF Brazil

Begin Date 2/70 Completion Open

Experimenter Stanford University/CNAE, Brazil

Geographic Location Western Hemisphere

Satellite ID ATS-3 Frequency VHF Mode -

Category of Experiment Education

Experiment Description

The ATS-3 VHF transponder is to be used in an experiment in the transmission of a regularly scheduled lecture course from Stanford Univ. to Comisso Nacional de Atiridades Espaciais (CNAE) in Brazil. Tests will be conducted to estimate the effectiveness of learning in a remote classroom and the effect on the instructor and class in the live classroom. Efforts of the synchronous satellite time delay and of a range of noise levels will be evaluated during the lectures. Two way computer links will be established through the satellite to demonstrate the ability to transfer blocks of data and to operate simple teletype terminals remotely, computer aided instruction programs.

This experiment was approved in May 1970 and initial equipment tests were run in April 1971. It is estimated that the experiment will commence in early Spring 1972. CNAE anticipates that the experiment will reveal the types of problems inherent in organizing a future permanent service and that it will form the basis of a further proposal for experiments using ATS F&G.

Report Accession Nos. 25, 131

User Form Nos. None

Similar Experiment Nos.

Primary Keywords: Education

Secondary Keywords: Brazil, Stanford University, Western Hemisphere

ATS/CTS EXPERIMENT DATA

Experiment No. 238

Experiment Title VHF NBS

Begin Date Aug 71 Completion Aug 72

Experimenter National Bureau of Standards

Geographic Location North and South America

Satellite ID ATS-3 Frequency VHF Mode N/A

Category of Experiment Time & Frequency Dissemination

Experiment Description

The National Bureau of Standards employed the ATS-3 satellite to relay a frequency and time format similar to that of WWV and WWVH (NBS standard time and frequency stations). The satellite relayed voice announcements of the time of day, ticks every second, audio-frequency tones, and a digital time code. Broadcasts occured at 1700 to 1715 and 2330 to 2345 GMT (Greenwhich Mean Time). The two 15-minute broadcast periods occured Monday through Friday, excluding holidays.

Specially equipped sites in South and North America gathered data from the satellite broadcasts which were used to determine the potential accuracy of the time signals.

Report Accession Nos. 19, 47, 285, 617

User Form Nos. 014

Similar Experiment Nos.

Primary Keywords: Time Dissemination

Secondary Keywords: Time/Frequency Synchronization, National Bureau of Standards, Broadcasting

ATS/CTS EXPERIMENT DATA

Experiment No. 239

Experiment Title VHF Vanguard

Begin Date 1968 Completion 1975

Experimenter U.S.C.G.

Geographic Location Atlantic and Pacific Oceans

Satellite ID ATS 1&3 Frequency _____ Mode _____

Category of Experiment Voice and Data Transmission

Experiment Description

A number of voice and data transmission experiments were conducted between Coast Guard ships and ground stations. Later experiments included ranging and position fixing. See Experiment 265.

Report Accession Nos. 1, 645, 664, 666

User Form Nos. None

Similar Experiment Nos. 265

Primary Keywords: Voice Communications, Data Transmission

Secondary Keywords: Vanguard, Coast Guard, teletype, VHF

ATS/CTS EXPERIMENT DATA

Experiment No. 244

Experiment Title MMW Reg 1

Begin Date Aug 69 Completion Sept 71

Experimenter NASA

Geographic Location North Carolina, U.S.A., Canada

Satellite ID ATS-5 Frequency 15.3 GHz 31.65 GHz also Mode N/A

Category of Experiment Millimeter Waves

Experiment Description

A Millimeter Wave Propagation Experiment using ATS-5 provided the first propagation measurements from an orbiting satellite in the Ku (12.5 to 18 GHz) and Ka (26.5 to 40 GHz) frequency bands. The objective of this experiment was to provide information on the propagation characteristics of the earth's atmosphere on this relatively unexplored portion of the electromagnetic spectrum.

The ATS-5 Millimeter Wave Experiment provided amplitude and phase measurements on two independent test links at 15.3 GHz (satellite-to-earth) and at 31.65 GHz (earth-to-satellite) during measured and defined meteorological conditions.

The test signal for both the uplink and downlink consisted of a carrier and two sidebands equally displaced on either side of the carrier. For the uplink, the sidebands could be set at one of the discrete values ± 1.0, ± 10 or ± 50 MHz from the 31.65 GHz carrier. For the downlink, the sidebands could be set to ± 0.1, ± 1.0, ± 10 or ± 50 MHz from the 15.3 GHz carrier.

Downlink measurements of carrier amplitude, upper and lower sideband amplitude, and relative sideband phase were recorded at the participating sites on magnetic tape and paper charts. Uplink measurements were performed onboard the satellite and telemetered to an ATS tracking station (Rosman, N.C.) for reduction and processing.

Report Accession Nos. 238, 513, 553, 595

User Form Nos. None

Similar Experiment Nos. 245, 608, 609, 638, 658

Primary Keywords: Millimeter Wave

Secondary Keywords: North Carolina, Meteorological Parameters, Canada, Propagation

ATS/CTS EXPERIMENT DATA

Experiment No. 245

Experiment Title MMW Reg 2

Begin Date Aug 69 Completion Sept 71

Experimenter NASA

Geographic Location North Carolina, U.S.A., Canada

Satellite ID ATS-5 Frequency 15.3 GHz Mode N/A

Category of Experiment Millimeter Waves

Experiment Description

A Millimeter Wave Propagation Experiment using ATS-5 provided the first propagation measurements from an orbiting satellite in the Ku (12.5 to 18 GHz) and Ka (26.5 to 40 GHz) frequency bands. The objective of this experiment was to provide information on the propagation characteristics of the earth's atmosphere on this relatively unexplored portion of the electromagnetic spectrum.

The ATS-5 Millimeter Wave Experiment provided amplitude and phase measurements on two independent test links at 15.3 GHz (satellite-to-earth) and at 31.65 GHz (earth-to-satellite) during measured and defined meteorological conditions.

The test signal for both the uplink and downlink consisted of a carrier and two sidebands equally displaced on either side of the carrier. For the uplink, the sidebands could be set at one of the discrete values ±1.0, ±10 or ±50 MHz from the 31.65 GHz carrier. For the downlink, the sidebands could be set to ±0.1, ±1.0, ±10 or ±50 MHz from the 15.3 GHz carrier.

Downlink measurements of carrier amplitude, upper and lower sideband amplitude, and relative sideband phase were recorded at the participating sites on magnetic tape and paper charts. Uplink measurements were performed onboard the satellite and telemetered to an ATS tracking station (Rosman, N.C.) for reduction and processing.

Report Accession Nos. 238, 513, 553, 595

User Form Nos. None

Similar Experiment Nos. 244, 608, 609, 638, 658

Primary Keywords: Millimeter Wave

Secondary Keywords: North Carolina, Meteorological Parameters, Canada, Propagation

ATS/CTS EXPERIMENT DATA

Experiment No. 246

Experiment Title Spread Spectrum Random Access (SSRA)

Begin Date April 1971 Completion May 1971

Experimenter Westinghouse Electric Co.

Geographic Location West Coast

Satellite ID ATS-5 Frequency L&C Band Mode FT

Category of Experiment Ranging & Position Fixing

Experiment Description

The SSRA technique utilized a P/N code which is spread over the full 35 MHz spacecraft link. The C/N_O was well below noise level and thus the presence of the SSRA signal had negligible effect on regular voice or TV use of the spacecraft link. Tests were performed where SSRA ranging, both one-way and turn around, was between two stations (ROSATS and MOJATS). The ranging was performed at a level of -20 db and greater below TV programming.

Report Accession Nos. 530

User Form Nos. None

Similar Experiment Nos.

Primary Keywords: Ranging, Position Fixing

Secondary Keywords: Westinghouse Electric Co., West Coast, Spread Spectrum Random Access

ATS/CTS EXPERIMENT DATA

Experiment No. 247

Experiment Title ALPHA-2

Begin Date July 1970 Completion February 1971

Experimenter USAF/Space & Missile Systems

Geographic Location Atlantic Ocean, U.S.A.

Satellite ID ATS-5 Frequency L & C Band Mode FT

Category of Experiment Maritime Communication

Experiment Description

The ATS-5 synchronous satellite, which is spinning, produces a return signal beam which sweeps across the Earth every 783 milliseconds. A signal reception window of approximately 50 milliseconds is available with each rotation. As a consequence of the satellite motion the L-band and C-band ranging data was required near simultaneously. To accomplish this the receiver continuously reacquired the satellite signal within a few milliseconds at the beginning of the burst and obtained ranging data at both L-band and C-band within the burst. The L-band ionospheric propagation delay variation was evaluated by comparing L-band and C-band range measurements. These tests were conducted for SAMSO by Applied Information Industries, Moorestown, N.J.

A receiver integrally connected with a computer-controlled data collection system has been developed and demonstrated over the three-month testing period. This receiver system is capable by means of maximum length PRN code modulation of producing fine grain L-band and C-band range measurements to the spinning ATS-5 during each illumination burst. The performance characteristics enabled these measurements to be made under these burst conditions and with small doppler components present.

The L-band ionospheric propagation delay data has been derived from range measurements made over several 24-hour test periods. The points produce a trend which shows how atmospheric delay varies as a function of local time. From the minimum in early morning to the maximum at mid-day, an equivalent range variation of 25 feet is indicated.

Report Accession Nos. 2, 611, 989

User Form Nos. 020

Similar Experiment Nos.

Primary Keywords: Maritime Communication

Secondary Keywords: L-Band, C-Band, Propagation, Ionosphere SAMSO, Atlantic Ocean

ATS/CTS EXPERIMENT DATA

Experiment No. 248

Experiment Title SP L-Band

Begin Date August 1974 Completion April 1975

Experimenter AII Systems

Geographic Location U.S.

Satellite ID ATS-5 Frequency _____ Mode _____

Category of Experiment Voice and Data Transmission

Experiment Description

The shore-based facilities for this experiment included Kings Point Earth Station and the Maritime Coordination Center located at the National Maritime Research Center, Kings Point, New York. In addition, a small c-band transmitting facility located at the NASA STADAN station, Rosman, North Carolina, were available to support the position determination experiments involving the ATS-5 satellite.

The shipboard satellite terminal communications equipment consists of an L-band transmitter, receiver and antenna subsystem capable of supporting full-duplex voice, data and ranging communications. This fundamental configuration supports various experimental operations: A computer-controlled automatic operational mode supported ranging (position determination), data or voice experimentation when utilizing the integrated ranging/voice/data modem. This modem and a series of software tasks provided an automatic configuration for the exchange of data communications messages between the ships and their respective shipping company offices, as well as the Maritime Coordination Center.

Report Accession Nos. None

User Form Nos. 024

Similar Experiment Nos. _____

Primary Keywords: Voice Communications, Data Transmission

Secondary Keywords: ATS-5, L-Band, Ranging

ATS/CTS EXPERIMENT DATA

Experiment No. 249

Experiment Title MARAD

Begin Date Mar 70 Completion Dec 71

Experimenter Applied Information Industries, Inc.

Geographic Location Atlantic Ocean, Arctic Ocean, Western Hemisphere

Satellite ID ATS-3, 5 Frequency L & C Band Mode FT

Category of Experiment Maritime Communications/Ranging

Experiment Description

The Maritime Administration (MARAD) and AII Systems used ATS-3 & 5 for several experiments in maritime communication.

One took place during the SS Manhattan's Spring 1970 Arctic Voyage. L-Band signals relayed by synchronous satellite were successfully used for navigation and data communication. RF signals containing ranging modulation were transmitted from the NASA Mojave station, relayed through ATS-5, and received by two stations. (One of these stations was at AII Systems Laboratories in Moorestown, NJ, and the other was aboard the SS Manhattan.) This demonstrated the feasibility of position fixing by making range measurements between a fixed ground station, a satellite in a known position, and a moving platform on the earth's surface. Also notable was the simultaneous reception and transmission of data communications on the ranging signal.

Another experiment comprised four months (in 1971) of receiver modification, transmitter development, data buffer design and fabrication, and field testing of the new equipment. Using these developments, the first time signals from a low-power terminal were transmitted to the Mojave station via the ATS-5 satellite. Further equipment test and check-out led to the installation of this equipment on board the SS Baltimore. Two-way data communications testing was conducted between the ship and NASA Mojave station while the ship made the round trip voyage from Bayway, NJ to Baytown, TX.

During the above experiment, configuration and data reduction techniques were developed in parallel with the hardware modification tasks.

Report Accession Nos. 2, 611, 665, 666

User Form Nos. 019, 021, 022

Similar Experiment Nos.

Primary Keywords: Maritime Communication, Ranging

Secondary Keywords: Ship Terminals, Ship to Shore, SS. Manhattan, Data Transmission, Voice Communication, L-Band, C-Band, MARAD, Atlantic Ocean, Arctic Ocean, Ranging

ATS/CTS EXPERIMENT DATA

Experiment No. 250

Experiment Title L-Band Ranging

Begin Date February 1971 Completion May 1971

Experimenter Westinghouse Electric Co.

Geographic Location West Coast

Satellite ID ATS-1/3/5 Frequency VHF/C/L Band Mode FT & CXL

Category of Experiment Ranging & Position Fixing

Experiment Description

This experiment was designed to measure the range error due to the earth atmosphere, (ionosphere, stratosphere and troposphere). C-band ranging to the spacecraft was used as a reference to which L-band and VHF ranging were compared. Determining the diurnal, nocturnal and solstice effects on these range errors was an important phase of the program which was performed over two 24 hour periods as well as several overlapping 4 hour periods. The test was performed by simultaneously ranging at C-band and L-band, or C-band and VHF.

Report Accession Nos. 638

User Form Nos. None

Similar Experiment Nos. 246

Primary Keywords: Ranging; Position Fixing

Secondary Keywords: West Coast, Westinghouse Electric Co., Goddard Space Flight Center (GSFC), L-Band, C-Band

ATS/CTS EXPERIMENT DATA

Experiment No. 251

Experiment Title L-Band Dot

Begin Date February 1971 Completion April 1973

Experimenter FAA/BOEING

Geographic Location North America

Satellite ID ATS-1&3 Frequency _____ Mode _____

Category of Experiment Ranging and Data Transmission

Experiment Description

FAA and Boeing transmitted at L-band from an aircraft (KC 135) to the ATS-1, 3 & 5 spacecraft. The downlink (at L-band) was received at NAFEC. One day of data was collected in this mode (28 April 1972) when the spacecraft experienced a malfunction in the L-band receiver causing the experiment to be changed to another configuration, i.e., Rosman transmitted to the spacecraft at C-band, and the downlink was received at the aircraft at L-band (the spacecraft was in the CXL mode). Both tone and P/N ranging signals were transponded by the spacecraft.

The collected data consisted of multipath and ionospheric effects. The aircraft has several antennas; forward, side, and down-looking, so that several angles of reflected signal could be examined. CRC and MOT (Canada) participated in the test by recording downlink signals received at Ottawa and Churchill, Canada.

Report Accession Nos. 288, 556

User Form Nos. 025, 026, 027

Similar Experiment Nos. 252

Primary Keywords: Ranging, Data Transmission

Secondary Keywords: North Atlantic, L-Band, Multipath, Boeing, Voice Communication

ATS/CTS EXPERIMENT DATA

Experiment No. 252

Experiment Title L-Band FAA

Begin Date April 1971 Completion April 1973

Experimenter FAA/Boeing

Geographic Location North America

Satellite ID ATS-1,3&5 Frequency C/L Band Mode CXL

Category of Experiment Ranging and Data Transmission

Experiment Description

FAA and Boeing transmitted at L-band from an aircraft (KC 135) to the ATS-1, 3 & 5 spacecraft. The downlink (at L-band) was received at NAFEC. One day of data was collected in this mode (28 April 1972) when the spacecraft experienced a malfunction in the L-band receiver causing the experiment to be changed to another configuration, i.e., Rosman transmitted to the spacecraft at C-band, and the downlink was received at the aircraft at L-band (the spacecraft was in the CXL mode). Both tone and P/N ranging signals were transponded by the spacecraft.

The collected data consisted of multipath and ionospheric effects. The aircraft has several antennas; forward, side, and down-looking, so that several angles of reflected signal could be examined. CRC and MOT (Canada) participated in the test by recording downlink signals received at Ottawa and Churchill, Canada.

Report Accession Nos. 288, 556

User Form Nos. 025, 026, 027

Similar Experiment Nos. 251

Primary Keywords: Ranging, Data Transmission

Secondary Keywords: North Atlantic, L-Band, Multipath, Boeing, FAA, Voice Communication

ATS/CTS EXPERIMENT DATA

Experiment No. 253

Experiment Title SHF Very-Long-Baseline-Interferometers (VLBI)

Begin Date 5/71 Completion 10/72

Experimenter Center for Astrophysics/GSFC

Geographic Location U.S.

Satellite ID ATS-1, 3, 5 Frequency SHF Mode FT

Category of Experiment Time and Frequency Dissemination

Experiment Description

During four observing sessions, ATS-1, ATS-3 and ATS-5 satellites were tracked using Very-Long-Baseline-Interferometers (VLBI) at C and L-bands. Tracking was done using transcontinental baselines and STN or Radio Astronomy facilities. 237 satellite observations were made covering 25 hours of joint transcontinental observing time.

The experiments are designed to explore the potentialities of VLBI measurement techniques with both synchronous satellites (ATS) and stellar radio sources for the purposes of tracking and geodesy. The specific objective is to evaluate the usefulness of the VLBI System as a high precision tracking technique. The System is envisioned not only as a potential tracking system but also as a technique for the study of station location, polar-motion, continental drift and other geodetic problems.

Report Accession Nos. 32, 455

User Form Nos. 005

Similar Experiment Nos.

Primary Keywords: Time Dissemination

Secondary Keywords: Time/Frequency Sychronization, Japan, California, Very-Long-Baseline-Interferometers (VLBI)

ATS/CTS EXPERIMENT DATA

Experiment No. 257

Experiment Title SHF CRC

Begin Date January 1971 **Completion** December 1971

Experimenter Canadian Research Center

Geographic Location Canada

Satellite ID ATS-1 **Frequency** _____ **Mode** _____

Category of Experiment Wave Propagation

Experiment Description

The ionosphere adversely affects satellite communication links through scintillation, absorption or path delay effects. These effects are more pronounced at high latitudes and low elevation angles and are therefore of great interest to Canada and the State of Alaska. Applications most affected include ETV, voice broadcast, tracking and data relay and traffic management.

The experiment consisted of observing effects of SHF signals at high latitudes and low elevation angles. By using ATS-1, a worst case was tested, because the ATS-1 location at 150° West Longitude (near Hawaii) made it appear just above the horizon. The CRC requirements did not effect the ATS-1 operating schedule; the CRC was provided with this schedule and observed the signal at appropriate times.

Report Accession Nos. 893

User Form Nos. None

Similar Experiment Nos. 260

Primary Keywords: Ionosphere, Scintillation, Absorption

Secondary Keywords: Voice Communication, Canada, Data Relay

ATS/CTS EXPERIMENT DATA

Experiment No. 258

Experiment Title SHF Search

Begin Date 12/71 Completion 12/71

Experimenter Public Systems Inc./Dept. of Justice

Geographic Location U.S.A/California

Satellite ID ATS-1 Frequency C-Band Mode FT

Category of Experiment Data Transmission/Facsimile Trans.

Experiment Description

Public Systems Inc. tested the feasibility of satellite communications for federal, state and local law enforcement. The experiment demonstrated the practicability of fingerprint transmission by satellite and tested parameter values necessary for adequate transmission. Facsimile, slow scan television, and high speed TTY (100 wpm) were transmitted.

Report Accession Nos. 14, 172, 280

User Form Nos. 010, 017

Similar Experiment Nos.

Primary Keywords: Data Transmission, Facsimile

Secondary Keywords: Law, Fingerprint, SEARCH, California

ATS/CTS EXPERIMENT DATA

Experiment No. 259

Experiment Title COMSAT C/L Prop.

Begin Date 1/6/72 Completion 4/30/72

Experimenter COMSAT Labs

Geographic Location Western Hemisphere

Satellite ID ATS-5 Frequency C & L Band Mode WBDM-L-Band ~~MA-C-Band~~

Category of Experiment Wave Propagation

Experiment Description

COMSAT monitored C-Band signals (4 gHz) from an INTELSAT Satellite from their Brazil Station. When they observed fading, they requested ATS-5 L and C-Band downlink signals and recorded received signal strengths. The data was analyzed to determine the frequency dependence of the scintillation magnitude.

Report Accession Nos. None

User Form Nos. None

Similar Experiment Nos.

Primary Keywords: Communications

Secondary Keywords: COMSAT, Western Hemisphere, Brazil, Washington, D.C.

ATS/CTS EXPERIMENT DATA

Experiment No. 260

Experiment Title CRC L-Band

Begin Date 9/71 Completion 5/72

Experimenter Comm Research Center/Ministry of Transport

Geographic Location Canada

Satellite ID ATS-5 Frequency C&L Band Mode CXL, WBDM

Category of Experiment Millimeter Waves

Experiment Description

CRC and MOT utilized the L-band downlink of ATS-5 to determine propagation and multipath effects. The MOT antenna was located at Ft. Churchill, Manstaba, Canada, the CRC antenna was located at Ottawa. The MOT test used 8 and 10 KHz tones to determine propagation effects, CRC used tones as well as P/N sequences to determine multipath effects.

Report Accession Nos. 309

User Form Nos. 009

Similar Experiment Nos.

Primary Keywords: Millimeter Wave

Secondary Keywords: L-Band, Canada

ATS/CTS EXPERIMENT DATA

Experiment No. 261

Experiment Title GE L-Band

Begin Date March 1971 Completion December 1973

Experimenter General Electric Co.

Geographic Location North America

Satellite ID ATS-1,3&5 Frequency _____ Mode _____

Category of Experiment Ranging and Position Fixing

Experiment Description

Factors that affect communications reliability and position fixing accuracy were measured and evaluated in the experimental program between 1968 and 1973. Automatic transponders were carried on ships in the Atlantic, Pacific and Gulf of Mexico and on the Mississippi River; on jet and propeller driven aircraft flying over the continental United States and North Atlantic to Shannon, Ireland and Thule, Greenland; on a buoy moored in deep water off Bermuda; and in a panel truck driven over country roads in upstate New York. Automatic transponders at Shannon, Ireland; Reykjavik, Iceland; Schenectady, New York; Kings Point, New York; Seattle, Washington; and Buenos Aires, Argentina were used to test a trilateration technique for real-time satellite location and to measure propagation and other factors that affect communication reliability and ranging accuracy.

The tone-code ranging technique provided a precision of approximately 0.1 nmi. at mid-latitude with one range measurement at L-band, one at VHF using signalling characteristics and parameters that are compatible with communications.

The ranging technique is digital and compatible with communications. Ranging signals are so short in duration that they could be inserted in pauses in speech communications. Extrapolations from the cost of experimental equipments show that it will cost only a modest sum to add circuits for position fixing to the satellite communications equipment for a ship or aircraft.

Report Accession Nos. 37, 236, 569, 234, 640

User Form Nos. _____

Similar Experiment Nos. _____

Primary Keywords: Ranging, Position Fixing

Secondary Keywords: ATS-5, L-Band, VHF, Tone-Code

ATS/CTS EXPERIMENT DATA

Experiment No. 263

Experiment Title TELESAT

Begin Date 9/72 Completion 9/72

Experimenter Telesat Canada

Geographic Location Canada

Satellite ID ATS-1 Frequency _____ Mode _____

Category of Experiment Broadcasting

Experiment Description

Transmit gain tests were performed on the two antennas for comparison with a signal transmitted from a third calibrated antenna in the Telesat system (at Allan Park, co-located with one of the antennas under test). Transmit pattern tests were performed by transmitting a signal from the antenna under test and scanning the satellite. The received signal from the standard calibrated antenna was recorded to provide the pattern data. These tests allowed Telesat to enter into the testing phase of its completed system after its own satellite was launched into synchronous orbit in November 1972.

Report Accession Nos. 31, 144

User Form Nos. 015

Similar Experiment Nos. _____

Primary Keywords: Broadcasting

Secondary Keywords:

Antenna
Canada
Telesat

ATS/CTS EXPERIMENT DATA

Experiment No. 264

Experiment Title MARAD/AII/PLACE

Begin Date 1/73 Completion Open

Experimenter AII/MARAD

Geographic Location Atlantic/Pacific

Satellite ID ATS-3,5 Frequency C-band Mode FT

Category of Experiment Maritime Communications

Experiment Description

The AII and MARAD experimented with various satellite communications equipment on various ships, and on shore. Equipment tested included AII, Magnovox, and COMSAT data/voice modems and the AII ranging/ data modem.

The shore-based facilities included Kings Point Earth Station and the Maritime Coordination Center located at the National Maritime Research Center, Kings Point, New York. In addition, a small C-band transmitting facility located at the NASA STADAN station, Rosman, North Carolina, was available to support the position determination experiments involving the ATS-5 satellite.

The shipboard satellite terminal communications equipment consisted of an L-band transmitter, receiver and antenna subsystem capable of supporting full-duplex voice, data and ranging communications. This fundamental configuration supported various experimental operations. A computer-controlled automatic operational mode supported ranging (position determination) and data or voice experimentation when utilizing the integrated ranging/voice/ data modem. This modem and a series of software tasks provided an automatic configuration for the exchange of data communications [messages between the ships and their respective shipping company offices,] as well as the Maritime Coordination Center. Ranging and/or position determination experiments and voice communications experiments can be conducted simultaneously if desired.

Ninety-three test periods were conducted from August 1974 to April 1975. The total operating time was 407 hours, of which 277 hours were considered useful.

Report Accession Nos. 645, 665, 666

User Form Nos. 023, 051

Similar Experiment Nos. 249

Primary Keywords: Maritime Communication, Data Transmission

Secondary Keywords: Atlantic Ocean, Pacific Ocean, MARAD, Teletype, Facsimile

ATS/CTS EXPERIMENT DATA

Experiment No. 265

Experiment Title Vanguard

Begin Date March 1972 Completion April 1973

Experimenter U.S.C.G.

Geographic Location Southern Atlantic and Pacific Oceans

Satellite ID ATS-3&5 Frequency _____ Mode _____

Category of Experiment Voice and Data Transmission/Position Fixing

Experiment Description

Vanguard was an experiment to evaulate the NASA-Goddard position location and aircraft communications equipment (PLACE), at C band (4/6GHz), using NASA's ship, the USNS Vanguard, and the ATS 3 and ATS 5 synchronous satellites. The Sea Test phase, extending from March 29, 1973 to April 15, 1973 was successfully completed; the principal objectives of the experiment were achieved. Position location and voice-quality measurements were excellent; ship position was determinad within 2 nmi; high-quality, 2-way voice transmissions resulted as determined from audience participation, intelligibility and articulation-index analysis. A C band/L band satellite trilateration experiment was also performed.

Report Accession Nos. 645, 666

User Form Nos. None

Similar Experiment Nos. 239, 264, 605, 657

Primary Keywords: Ranging, Voice Communication

Secondary Keywords: PLACE, C-band, L-band, Vanguard

ATS/CTS EXPERIMENT DATA

Experiment No. 268

Experiment Title L-Band Trilat

Begin Date January 1974 **Completion** January 1976

Experimenter General Electric Co.

Geographic Location U.S.

Satellite ID ATS-5 **Frequency** _____ **Mode** _____

Category of Experiment Position Fixing

Experiment Description

An L-band trilateration network has been developed which locates the ATS-5 satellite in near real-time and provides short term position predictions. A location precision of 0.0002° in latitude and longitude and 20 meters in earth center distance has been achieved. The accuracy of position fixes is estimated at 0.0005° latitude and longitude and 50 meters earth center distance. On every range measurement, self calibration circuits in the two automatic remote transponders return to the master ground station a measurement of the time delay experienced by the ranging signal as it passes through the transponder, thus eliminating a major source of uncertainty in slant range accuracy.

Report Accession Nos. 235, 646

User Form Nos. None

Similar Experiment Nos. _____

Primary Keywords: Trilateration, L-Band

Secondary Keywords: Accuracy, C-Band, Ranging, Satellite

ATS/CTS EXPERIMENT DATA

Experiment No. 281

Experiment Title Los Alamos Lab Auroral Experiment

Begin Date 10/70 Completion 10/71

Experimenter EG & G

Geographic Location Western Hemisphere

Satellite ID ATS-1 Frequency VHF Mode N/A

Category of Experiment Aircraft Communications

Experiment Description

ATS-1 was used to help provide ground -- air communications support for 2 aircraft operating at opposite ends of magnetic field lines during Auroral studies. One aircraft operated out of Christchurch, New Zealand. The other from College, Alaska. The ground control station was located at Albuquerque, N.M. The experiments were successfully carried out in October, November 1970, and 16 August through 2 September 1971.

Los Alamos Laboratories' fall rocket program in the Pacific Ocean [Operation Pisaposte] also used ATS-1 to fulfill communications requirements. The ATS-1 Satellite was the primary communications link for ground-to-ground and prelaunch coordination and for passing vector information between airborne instrumentation stations, ground stations and launch sites.

Report Accession Nos. 1, 20, 21,

User Form Nos. None

Similar Experiment Nos. 232

Primary Keywords: Aircraft Communications, Data Transmission

Secondary Keywords: Western Hemisphere, Voice Communication

ATS/CTS EXPERIMENT DATA

Experiment No. 282

Experiment Title VHF/NLM

Begin Date 10/71 Completion Open

Experimenter Lister Hill National Center for Biomedical Communication

Geographic Location Northwest U.S.

Satellite ID ATS-1 Frequency VHF Mode Duplex

Category of Experiment Health Services

Experiment Description

Stanford Electronics Laboratory, Univ. of Wisconsin, and Univ. of Washington performed computer-to-computer experiments via ATS-1 at VHF to investigate the feasibility of transmission of the medical library materials. The National Library of Medicine (NLM) itself conducted similar experiments.

Report Accession Nos. 40, 270, 274, 275, 276

User Form Nos. 043

Similar Experiment Nos.

Primary Keywords: Health Services

Secondary Keywords: Pacific Northwest, Wisconsin, Washington, Data Transmission, Computers

ATS/CTS EXPERIMENT DATA

Experiment No. 283

Experiment Title VHF/UCLA

Begin Date 9/71 Completion 10/71

Experimenter UCLA/TRW Systems

Geographic Location California/Colorado

Satellite ID ATS-3 Frequency SHF/VHF Mode N/A

Category of Experiment Education, Wave Propagation

Experiment Description

UCLA/TRW used ATS-3 VHF signals to diagnose wave excitation processes in the ionosphere. The modulation used 565 Hz of the 149 MHz uplink from Boulder, Colo. ground station.

ATS-1 and ATS-3 signals were monitored over a 24-hour period on chart recorder. Correlations with the solar cycle were made. Spectrum analyses was also used to look for sidebands and instabilities.

Report Accession Nos. None

User Form Nos. 037

Similar Experiment Nos.

Primary Keywords: Education, Wave Propagation

Secondary Keywords: Magnetosphere, Faraday Effect, Ionosphere, California, Colorado

ATS/CTS EXPERIMENT DATA

Experiment No. 284

Experiment Title VHF High Note

Begin Date 3/71 Completion 6/72 (Phase 2)

Experimenter Atomic Energy Commission/Sandia

Geographic Location U.S.A.

Satellite ID ATS-1, 3 Frequency VHF Mode High Power

Category of Experiment Ranging & Position Fixing

Experiment Description

This experiment investigated the feasibility of using satellites to provide near real time position location data to remote stations located in the continguous United States.

A base station was set up to transmit to the satellite on 149.183 MHz and receive on 135.563 MHz. The antennas were crossed dipole yagis, circularly polarized. The mobile station was similar except two antennas were used: a 5/8 λ vertical stub, and a horizontal crossed dipole array, phase for circular polarization end on. Modulation was Manchester split-phase PCM/FM at deviation of ±6 KHz.

DME tests were run in which the base station sent a ranging tone to the vehicle transponder and a digital phase meter measured the delay between transmitted and received signals. Closed loop measurements for base station and vehicle established equipment delays. Experiment showed degrading effect of Faraday rotation: Signal margin varied widely, favoring vertical stub at times, and the crossed dipole at other times.

Position location was not attempted because of difficulties with the C-band antenna on ATS-3; however, ranging tests were made to determine magnitude of scatter and range rate.

Report Accession Nos. None

User Form Nos. 008

Similar Experiment Nos.

Primary Keywords: Ranging, Position Fixing

Secondary Keywords: Atomic Energy Commission

ATS/CTS EXPERIMENT DATA

Experiment No. 285

Experiment Title VHF Stanford

Begin Date 5/71 Completion 6/72 Open

Experimenter Stanford Univ., Univ. of Nevada, & Univ. of New Mexico

Geographic Location U.S.A.

Satellite ID ATS-1,3 Frequency VHF Mode

Category of Experiment Education

Experiment Description

Demonstration of satellite distribution of computer-oriented instruction for rural schools between Stanford University, the Univ. of Nevada, and Univ. of New Mexico. Project is planning expansion of operations with other southwest universities. Equipment was installed at Stanford and at Isleta Pueblo Elementary School near Albuquerque, NM. CAI service was provided via ATS-3 for 90 minutes per day.

Report Accession Nos. 28, 45, 601

User Form Nos. 018

Similar Experiment Nos.

Primary Keywords: Education

Secondary Keywords: Stanford University, California, Nevada, New Mexico, Computers, Indian, Rural Education

ATS/CTS EXPERIMENT DATA

Experiment No. 286

Experiment Title HET - VHF - ARC

Begin Date 6/74 Completion Open

Experimenter Appalachian Regional Commission/HET

Geographic Location Appalachia

Satellite ID ATS-I Frequency VHF Mode

Category of Experiment Education

Experiment Description

The AESP uses the ATS-3 in correlation with their ATS-6 experiment, for talk-back capabilities and conferencing. See Experiment #612.

Report Accession Nos. 567, 573, 622, 690, 723, 754

User Form Nos. None

Similar Experiment Nos. 612

Primary Keywords: Education

Secondary Keywords: HET Experiments, Appalachian Regional Commission, Appalachian Education Satellite Project (AESP), Appalachia, Rural Education

ATS/CTS EXPERIMENT DATA

Experiment No. 287

Experiment Title VHF Seek

Begin Date 1/12/72 Completion 2/72 - Fall 72

Experimenter University of Nevada, Reno/Sierra Research Corp.

Geographic Location U.S.A.

Satellite ID ATS-3 Frequency VHF Mode -

Category of Experiment Data Transmission/Meteorology

Experiment Description

Radar pictures gathered from within eye of hurricane were transmitted between Boulder, Colorado and Reno, Nevada. Bit error rate vs. uplink power were obtained using VHF sub carrier methods (FSK) digital. Aircraft type antenna was used for uplink, helix antenna was used for receive.

Report Accession Nos. 6, 7, 44

User Form Nos. 001

Similar Experiment Nos.

Primary Keywords: Meteorology, Data Transmission

Secondary Keywords: University of Nevada, Nevada, Hurricane, Storms, Radar

ATS/CTS EXPERIMENT DATA

Experiment No. 288

Experiment Title GE/MARAD

Begin Date 4/72 **Completion** 5/72

Experimenter General Electric/MARITIME Administration

Geographic Location Atlantic

Satellite ID ATS-1, 3 **Frequency** VHF **Mode** N/A

Category of Experiment Ranging & Position Fixing

Experiment Description

General Electric Research & Development Center (for MARAD) used VHF tone ranging to determine the position of a mobile terminal. Simultaneous ranging to ATS-1 and 3 was performed, as well as single satellite ranging.

A master station located at GE Schenectady, NY, transmitted signals to the satellite, the return signal was recorded by a ship and up to three slave stations, which then transponded the range signal to the master station via satellite. Initially, the test used only ATS-3 with the mobile terminal (a ship) located at King's Point, Long Island. In addition to ranging tones, the experiment involved transmission of facsimile teletype, and simplex voice.

Report Accession Nos. 23, 37, 101, 631

User Form Nos. 2-011

Similar Experiment Nos.

Primary Keywords: Ranging, Position Fixing

Secondary Keywords: Atlantic Ocean, Pacific Ocean, Ships, Maritime, General Electric, MARAD

ATS/CTS EXPERIMENT DATA

Experiment No. 289

Experiment Title VHF Calypso

Begin Date June 1972 Completion January 1976

Experimenter Cousteau Group, Inc.

Geographic Location Antarctica

Satellite ID ATS-1&3 Frequency _____ Mode _____

Category of Experiment Voice and Data Communications

Experiment Description

A Jacques Cousteau organized expedition to the Antartica Peninsula used ATS-1 and 3 to facilitate communications. The crew of the Calypso transmitted observed and measured data from the ship and received communications from their base station during the expedition.

Report Accession Nos. 203

User Form Nos. None

Similar Experiment Nos. _____

Primary Keywords: Voice Communication, Data Transmission

Secondary Keywords: Calypso, Cousteau, Antarctica, Oceanography

ATS/CTS EXPERIMENT DATA

Experiment No. 290

Experiment Title VHF Bering Sea

Begin Date December 1972 Completion March 1973

Experimenter U.S./U.S.S.R.

Geographic Location Bering Sea

Satellite ID ATS-1 Frequency _____ Mode _____

Category of Experiment Communication/Meteorology

Experiment Description

A joint experiment involving U.S. and U.S.S.R. scientists on microwave measurements of the atmosphere, sea, and ice conditions in the area of the Bering Sea. The objective of the experiment was to make measurements from U.S. and U.S.S.R. aircraft of microwave radiation emitted in the K to X band range by the sea surface at varying temperatures and sea state, by the sea ice, and by zones of liquid precipitation.

ATS-1 was used for the communications link between a U.S. communications base at Anchorage, Alaska and a soviet base at Cape Schmidt.

Report Accession Nos. 4,202

User Form Nos. None

Similar Experiment Nos. None

Primary Keywords: Bering Sea, Meteorology

Secondary Keywords: Voice Communication, Microwave Measurements, Russia, Oceanography

ATS/CTS EXPERIMENT DATA

Experiment No. 291

Experiment Title Zurita

Begin Date Jan 1972 Completion Sep 1973

Experimenter Atomic Energy Commission

Geographic Location Alaska, Hawaii

Satellite ID ATS-1 Frequency _____ Mode _____

Category of Experiment Voice Communications

Experiment Description

This was a jointly sponsored research program in the Pacific area requiring satellite voice communications between Alaska and Hawaii. The principal participants of the program were the Los Alamos Scientific Laboratory, Sandia Corporation, and the University of Alaska. The purpose of the experiment was to do magnetic field line mapping using an explosive barium release from an altitude controlled rocket. The communication circuit using ATS-1 satellite connected the ground stations located at Point Barrow (Alaska), Kotzebue (Alaska), and Mt. Haleakala on the island of Maui, Hawaii.

Report Accession Nos. 26

User Form Nos. None

Similar Experiment Nos. _____

Primary Keywords: Voice Communication

Secondary Keywords: Alaska , Hawaii, Atomic Energy Commission, Barium

ATS/CTS EXPERIMENT DATA

Experiment No. 292

Experiment Title VHF Clipper

Begin Date 1973 Completion August 1977

Experimenter Moody College of Marine Science/Texas A&M Univ.

Geographic Location Caribbean/Atlantic

Satellite ID ATS-3 Frequency VHF Mode

Category of Experiment Communications/Support

Experiment Description

Moody College of Marine Science & Maritime Resources used ATS-3 for voice communications and transmission of experimental data to and from their research vessel CLIPPER during cruises in the Atlantic. The research program conducted on board the CLIPPER involved the collection and transmission of parameters such as sea surface temperature, salinity, chlorophyll, and water quality. In some instances facsimiles of graphs and charts were transmitted via ATS-3.

Report Accession Nos. 9

User Form Nos. 007, 038, 039, 040

Similar Experiment Nos.

Primary Keywords: Communications, Data Transmission

Secondary Keywords: Oceanography, Meteorology, Caribbean, Atlantic Ocean

ATS/CTS EXPERIMENT DATA

Experiment No. 293

Experiment Title GE/EXXON

Begin Date 7/73 Completion 2/74

Experimenter General Electric/EXXON Corp.

Geographic Location Atlantic Ocean

Satellite ID ATS-1, 3 Frequency VHF Mode

Category of Experiment Maritime Communications

Experiment Description

This experiment was a joint effort of Exxon Corporation and the General Electric Company to make a comprehensive evaluation of the maritime uses of satellite communications and position-fixing. The National Aeronautics and Space Administration provided the use of two applications Technology Satellites, ATS-1 and ATS-3, for one hour a day of VHF transmission time. The experiment was conducted from July 1973 through February 1974 during which communications messages and ranging signals were exchanged between the ship ESSO BAHAMAS, carrying oil from Venezuela to the U.S. East Coast, and the General Electric station in Schenectady, New York. The ground station relayed these messages to and from the Exxon New York City office over telephone land lines.

The communications modes used were teletype, voice, facsimile and slow-scan TV. They were evaluated with regard to transmission time, quality, operational ease, interconnection factors, application to specific information transfer, value to operating efficiency as well as their adaptability with the internal communication and management techniques used within the Exxon Corporation.

Various constraints on ship-borne equipment that would affect the design of an operational ship satellite terminal were evaluated. The accuracy and reliability of ranging and position fixing from geostationary satellites using the tone-code technique was investigated and data on the factors affecting its accuracy were obtained.

Report Accession Nos. 15

User Form Nos. 050

Similar Experiment Nos.

Primary Keywords: Maritime Communication

Secondary Keywords: Position Fixing, Atlantic Ocean, Ships, Voice Communication, Teletype, Facsimile

ATS/CTS EXPERIMENT DATA

Experiment No. 294

Experiment Title SP HET

Begin Date January 1973 Completion August 1977

Experimenter ARC, WAMI, VA, IHS, State of Alaska, Fed. of Rocky Mtn. Sts.

Geographic Location

Satellite ID ATS-1&3 Frequency Mode

Category of Experiment Education/Health Services

Experiment Description

ATS-1&3 were used for voice communications in the Health/Education Telecommunications(HET) experiments. One-way video-audio over ATS-6 with ATS-1 and 3 used to give network interactive voice capability. See Experiment 612 for details.

Report Accession Nos.

User Form Nos.

Similar Experiment Nos. 612

Primary Keywords: Education, Health Services

Secondary Keywords: HET, Alaska, Appalachia, WAMI, Veteran's Administratio

ATS/CTS EXPERIMENT DATA

Experiment No. 295

Experiment Title VHF NIAID

Begin Date 10/73 Completion Open

Experimenter National Institute of Allergy & Infectious Diseases (NIAID)

Geographic Location U.S.A. and Pacific Ocean

Satellite ID ATS-1 Frequency VHF Mode N/A

Category of Experiment Communications/Health Services

Experiment Description

NIAID was a feasibility study of scientific communications between biomedical research investigators via surface and satellite telecommunications. Using mainly ATS-1, and through the cooperation of Lister Hill National Center for Biomedical Communications/National Library of Medicine (LHNCB/NLM), a regular schedule of communication sessions occured in a frequency ranging from semi-weekly to daily. These sessions involved upward of 100 scientists scattered throughout the United States and the Pacific from Alaska to New Zealand.

Report Accession Nos. None

User Form Nos. 029

Similar Experiment Nos.

Primary Keywords: Communications, Health Services

Secondary Keywords: Conferences, Cook Islands, Biomedical, Alaska, Pacific Ocean, Education, National Institute of Allergy & Infectious Diseases (NIAID), New Zealand, Hawaii, University of Hawaii, University of the South Pacific

ATS/CTS EXPERIMENT DATA

Experiment No. 297

Experiment Title VHF - USP/FIJI - PEACESAT

Begin Date 1/74 Completion Open

Experimenter University of the South Pacific

Geographic Location Pacific Ocean, Hawaii

Satellite ID ATS-1 Frequency VHF Mode N/A

Category of Experiment Communications/Education

Experiment Description

The major emphasis of the USP's experimentation with ATS-1 has been concerned with optimizing the resource use of a small school within a widely scattered island environment. Eleven tiny countries contribute to the University, and the communication experiments made available by ATS-1 have allowed the University the opportunity to develop a unique system of educational delivery and administration. It is used in external classroom, curriculum development, continuing education and information exchange.

Report Accession Nos. 206, 210, 311, 577, 749, 912

User Form Nos. 053

Similar Experiment Nos.

Primary Keywords: Education, Communications

Secondary Keywords: Conferences, Teacher Education, Teleconferencing, Peacesat, University of South Pacific, Pacific Ocean, Government, Voice Communication, Hawaii

ATS/CTS EXPERIMENT DATA

Experiment No. 300

Experiment Title VHF Indian Health Center Health Info. System H.E.T.

Begin Date 5/9/74 Completion 5/9/74

Experimenter (IHCHIS) Indian Health Center Health Info. System

Geographic Location Alaska

Satellite ID ATS-1 Frequency VHF Mode N/A

Category of Experiment Health Services/Data Transmission

Experiment Description

The Indian Health Center Information System used the ATS-1 VHF communication system on May 9, 1975 to check out their ground station equipment. The equipment was then used for an HET experiment on ATS-6.

Report Accession Nos. 11, 40, 43, 52, 54, 60, 508, 579, 690

User Form Nos. None

Similar Experiment Nos. 277, 677

Primary Keywords: Health Services, Data Transmission

Secondary Keywords: Indian Health Service, Hardware, Ground Stations, Alaska

ATS/CTS EXPERIMENT DATA

Experiment No. 301

Experiment Title VHF GATE

Begin Date Jan 1974 Completion Sep 1974

Experimenter NOAA

Geographic Location

Satellite ID ATS-3 Frequency Mode

Category of Experiment Voice and Data Communications

Experiment Description

The GATE Project used the ATS-3 satellite for:

(1) Voice coordination between ships, the CV-990, the University of Wisconsin, and Dakar during critical decision periods just prior to aircraft's arrival in the observation area.

(2) Facsimile transmission of radar images from OCEANOGRAPHER, RESEARCHER and GILLISS to Dakar to complement satellite images and assist in "fine tuning" the aircraft program.

(3) Additional data transmission from GILLISS to augment the limited HF radio equipment and number of operators. GILLISS is presently unable to meet minimum data delivery requirements.

(4) Direct communications with operational commands in the United States.

Report Accession Nos. None

User Form Nos. None

Similar Experiment Nos.

Primary Keywords: Voice and Data Communications

Secondary Keywords: NOAA
GATE Project
Radar
Facsimile

ATS/CTS EXPERIMENT DATA

Experiment No. 302

Experiment Title NEA

Begin Date Jan 1976 Completion Apr. 1977

Experimenter National Education Association

Geographic Location Appalachia, Alaska

Satellite ID ATS-1 & 3 Frequency _____ Mode _____

Category of Experiment Voice Communication, Education

Experiment Description

ATS-1 and ATS-3 were used for audio interaction between six Appalachian sites and four or more Alaskan sites. The ATS-1 & 3 satellites were used in conjunction with ATS-6 experiment for television - radio teleconferences for teachers training in the Appalachian and Alaskan region.

Report Accession Nos. None

User Form Nos. None

Similar Experiment Nos. _____

Primary Keywords: Voice Communication, Education

Secondary Keywords: Appalachia
Alaska
ATS-6
Teachers
Teleconference

ATS/CTS EXPERIMENT DATA

Experiment No. 304

Experiment Title VHF - OPN (Japanese ATS Participation (SHF))

Begin Date 1966 Completion Open

Experimenter Ministry of Posts & Telecommunications

Geographic Location Japan

Satellite ID ATS-1 Frequency _____ Mode All

Category of Experiment Time & Frequency Dissemination/Data Transmission

Experiment Description

Kashima has participated in many experiments using the ATS-1 spacecraft (S/C) including SSCC (Spin Scan Cloud Cover) earth pictures, SSRR (Spread Spectrum Range and Range Rate), as well as ATS R&RR (ATS Range and Range Rate), the latter being of particular help in determining the S/C orbit. Kashima has also experimented with time division multiplex and video transmission using the S/C in the FT mode. Their transmitter was originally tuned to operate with repeater 1, however, since the failure of the repeater (2 Feb. 1972) Kashima has returned to the repeater 2 frequency.

Report Accession Nos. 208, 598, 617

User Form Nos. None

Similar Experiment Nos. 241, 246, 253

Primary Keywords: Time Dissemination, Data Transmission

Secondary Keywords:
Japan
Radio Research Laboratory (RRL)
Ministry of Posts and Telecommunications
Telecommunication

ATS/CTS EXPERIMENT DATA

Experiment No. 305

Experiment Title ALOHA

Begin Date 1972 Completion Open

Experimenter University of Hawaii

Geographic Location U.S.A./Pacific Ocean

Satellite ID ATS-1 Frequency VHF Mode N/A

Category of Experiment Data Transmission/Computer

Experiment Description

The ALOHA System Research Project at the University of Hawaii has developed and built a computer-communication network for console-to-computer and computer-to-computer communications which are joined in a multi-network at the ALOHA System MENEHUNE (multiplexer) using packet broadcasting technique whereby data is sent from one node in a net to another by attaching address information to the data to form a packet, typically from 30 to 1000 bits in length. The packet is then broadcast over a communication channel which is shared by a large number of nodes in the net; as the packet is received by these nodes the address is scanned and the packet is accepted by the proper addressee (or addressees) and ignored by the others.

Since the MENEHUNE is interfaced into the University of Hawaii computer, and ARPANET TIP, and ATS-1 satellite channel connected to other machines in the Pacific, and an international TELEX line to Japan, packets sent over the radio channel can be directed to any of these networks under user control. Thus a user with an ALOHA SYSTEM terminal on the small island of Molokai could direct his data packets through MENEHUNE in Honolulu over a geographical area extending from Norway across the Atlantic, the U.S. mainland and the Pacific into Japan & Australia.

Report Accession Nos. 50, 218, 225, 227, 228

User Form Nos. 048, 2-036

Similar Experiment Nos.

Primary Keywords: Data Transmission

Secondary Keywords: NASA Ames Research Center, University of Hawaii, University of Alaska, Alaska, Hawaii, Packet Switching, Pacific Ocean, Computer Network

ATS/CTS EXPERIMENT DATA

Experiment No. 306

Experiment Title VHF DRAKE (Dynamic Response and Kinematic Experiment)

Begin Date 1/1975 Completion Open

Experimenter Texas A&M University/National Science Foundation

Geographic Location Southern Ocean/Antarctic

Satellite ID ATS-3 Frequency VHF Mode N/A

Category of Experiment Communications/Support

Experiment Description

FDRAKE (First Dynamic Responce and Kinematic Experiment) - This experiment by the International Southern Oceans Studies combines both a monitoring experiment to study the statistical properties and space-time scales of variability of the Antarctic Circumpolar Current (ACC) within the Drake Passage and local experiments to test theories of dynamical balance, mixing and exchange with other oceans. The specific goals of FDRAKE (which began in the Austral summer of 1974-1975) are: (1) to describe the energy-containing space and time scales in the Drake Passage in order to design a long-term experiment to monitor the transport and internal structure of the ACC to be carried out during FGGE, and (2) to describe selected property distributions within the Drake Passage and the Western Scotia Sea for the continuing study of mixing processes. ATS-3 was used to provide communications support for those involved in FDRAKE.

Report Accession Nos. None

User Form Nos. 2-012,

Similar Experiment Nos. 317

Primary Keywords: Communications, Data Transmission

Secondary Keywords: Texas A&M University, Texas, National Science Foundation, Southern Ocean, Antarctic, Ships, DRAKE

ATS/CTS EXPERIMENT DATA

Experiment No. 307

Experiment Title VHF OCEAN

Begin Date Dec 1977 Completion Open

Experimenter University of Miami

Geographic Location Atlantic/Florida/Pacific

Satellite ID ATS-3 Frequency VHF Mode N/A

Category of Experiment Communications/Maritime Communications

Experiment Description

University of Miami is using the ATS-3 VHF for ship routine and emergency message handling and also synchronous PCM data transmissions. Miami has developed the ASCII-PCM bit synchronizer and modems for high speed computer data. In December 77 they began handling all traffic for Oceanography ships.

Report Accession Nos. None

User Form Nos. None

Similar Experiment Nos.

Primary Keywords: Communications, Maritime Communication

Secondary Keywords: Atlantic Ocean, Florida, Ships, University of Miami,

ATS/CTS EXPERIMENT DATA

Experiment No. 309

Experiment Title NSF (GYRE)

Begin Date 3/76 Completion 9/76

Experimenter National Science Foundation/Texas A&M Univ.

Geographic Location Atlantic (tropical), North Atlantic

Satellite ID ATS-3 Frequency VHF Mode N/A

Category of Experiment Communications/Data Transmission

Experiment Description

The National Science Foundation sponsored a series of programs aboard the R/V GYRE during the spring and early summer of 1976. The basic research was conducted in the tropical Atlantic.

A communications network was established between the GYRE, College Station, Texas and Galveston, Texas using ATS-3. This network was used to investigate the feasibility and utility of using satellite communications to transmit high volume data. Data transmission by voice and facsimile over the satellite VHF channels materially enhanced the quality of the data collection and data reduction facilities. Bathythermometric data was transmitted to computer facilities on shore for quicker analysis.

The research continued the studies of the subsurface countercurrent and also included work on the closely related sea-surface part of the system.

This program improved understanding of diagenetic processes in the uppermost meters of deep sea sediments and sharpened ability to read information from the geologic record.

Report Accession Nos. None

User Form Nos. 2-044

Similar Experiment Nos. 325

Primary Keywords: Communications, Data Transmission

Secondary Keywords: National Science Foundation, Texas A&M University, Atlantic Ocean, GYRE, Texas, Ships

ATS/CTS EXPERIMENT DATA

Experiment No. 310

Experiment Title VHF DEA

Begin Date Apr. 1976 Completion Open

Experimenter Drug Enforcement Administration/GE

Geographic Location U.S.

Satellite ID ATS - 1&3 Frequency _____ Mode _____

Category of Experiment Voice Communications/ Position Fixing

Experiment Description

The Drug Enforcement Administration (DEA) and the Immigration and Naturalization Service (INS) conducted an experiment to investigate and demonstrate the ability and usefulness of geosynchronous satellites to improve and land mobile communications and to provide a vehicle position fixing capability heretofore unavailable to DEA and INS.

The mobile unit was a station wagon with a specially designed antenna, a VHF transceiver, and a digital tone-code ranging responder. The DEA building in Washington, DC and a Border Patrol office in Tucson, AZ were used as ground stations. Voice, slow-scan TV, audio test tones, and intrusion sensor data were relayed to and from the mobile unit under a variety of conditions, both in Washington, DC and the south western U.S. Vehicle positions to within one quarter mile were achieved in real-time; even closer after post-experiment analysis.

Report Accession Nos. 631, 767

User Form Nos. None

Similar Experiment Nos. _____

Primary Keywords: Voice Communication , Position Fixing

Secondary Keywords: Drug Enforcement Administration, Slow-scan Television, Tone-code Ranging

ATS/CTS EXPERIMENT DATA

Experiment No. 311

Experiment Title GSFC

Begin Date 7/1976 Completion Open

Experimenter Goddard Space Flight Center - NASA

Geographic Location Maryland

Satellite ID ATS-3 Frequency VHF Mode N/A

Category of Experiment Communications

Experiment Description

The Goddard Space Flight Visitor's Center used the VHF communication equipment of the ATS-3 so that visitors could talk via a satellite.

Report Accession Nos. None (This is only a visitor demonstration use.)

User Form Nos. None

Similar Experiment Nos.

Primary Keywords: Communications

Secondary Keywords: Goddard Space Flight Center (GSFC), National Aeronautics and Space Administration (NASA)

ATS/CTS EXPERIMENT DATA

Experiment No. 312

Experiment Title ALC (American Lutheran Church)

Begin Date 6/1976 Completion Open

Experimenter The American Lutheran Church

Geographic Location U.S.A.

Satellite ID ATS-1 Frequency VHF Mode N/A

Category of Experiment Education/Voice Communications

Experiment Description

The American Lutheran Church evaluated the practicality and desirability of using a combination of portable and fixed terminals to facilitate communication at many levels within the church. In addition to continuing education the prime area of concentration, the equipment was used to facilitate communication between local and national offices of The American Lutheran Church as well as between these same groups and churches, offices, and institutions overseas. The experiment used voice mode exclusively.

Report Accession Nos. 735

User Form Nos. 2-041

Similar Experiment Nos.

Primary Keywords: Education, Voice Communication

Secondary Keywords: American Lutheran Church, Minnesota

ATS/CTS EXPERIMENT DATA

Experiment No. 315

Experiment Title ERDA

Begin Date January 1978 Completion January 1979

Experimenter ERDA

Geographic Location

Satellite ID ATS-1 Frequency Mode

Category of Experiment Communications/Data Transmission

Experiment Description

ERDA conducted radiological survey of former nuclear test site at Enewetak to determine which areas of the atoll require clean-up so they may be returned to the people of Enewetak for beneficial use. This effort was essentially an applied research activity employing new experimental techniques which require prompt and frequent communications between Enewetak and Las Vegas. The communications link was essential to the activity so that voice and technical data could be exchanged on a timely basis. Facsimile transmission devices were employed to transmit data in graphic and tabular form, such as radio-activity isopleths. Voice privacy units were also employed along with clear voice transmission.

Report Accession Nos.

User Form Nos.

Similar Experiment Nos. 336

Primary Keywords: Communications, Data Transmission

Secondary Keywords: Nevada, Enewetak, Energy Research and Development Administration (ERDA)

ATS/CTS EXPERIMENT DATA

Experiment No. 316

Experiment Title NSTL (National Space Technology Laboratories)

Begin Date 10/5/76 Completion 10/13/76

Experimenter Southern Regional Medical Consortium

Geographic Location Southern U.S.A.

Satellite ID ATS-3 Frequency VHF Mode

Category of Experiment Health Services/Data Transmission

Experiment Description

National Space Technology Laboratories, Bay St. Louis, Mississippi and the Southern Regional Medical Consortium used ATS-3 for an Emergency Medical-Satellite Communications demonstration at the National Convention of Emergency Physicians and Emergency Care Nurses in the Louisiana Superdome in New Orleans.

They transmitted EKG and voice from an ambulance into the emergency room at Forrest General Hospital in Hattiesburg, Convention Center.

The purpose of the demonstration was to acquaint medical practitioners, particularly cardiogists and emergency room physicians, with the extended telemetry communications capability of satellites.

Report Accession Nos. None

User Form Nos. 2-019

Similar Experiment Nos.

Primary Keywords: Health Services, Data Transmission

Secondary Keywords: Mississippi, Southern U.S.A., Southern Regional Medical Consortium, National Space Technology Laboratories, Hospital, Electrocardiogram

ATS/CTS EXPERIMENT DATA

Experiment No. 317

Experiment Title LAMONT

Begin Date 10/15/76 Completion 3/8/77

Experimenter Lamont-Doherty Geological Observatory

Geographic Location Southern Ocean

Satellite ID ATS-3 Frequency VHF Mode N/A

Category of Experiment Data Transmission

Experiment Description

During the austral summer 1976/1977 the Office of Polar Programs of the U.S. National Science Foundation funded a research project aboard the Argentine vessel ARA ISLAS ORCADAS (formerly the USNS ELTANIN). The goals of the project were to collect a set of modern hydrographic data in the Atlantic sector of the Southern Ocean, an area which previously had been poorly sampled. The time of the cruises were:

Cruise 11-76 - October 24, 1976 - December 20, 1976 - Buenos Aires to Cape Town

Cruise 12-77 - January 3, 1977 - March 5, 1977 - Cape Town to Buenos Aires.

During the period January-February 1977 the U.S. ship MELVILLE was operating in the Drake Passage, as part of the International Southern Ocean Studies project F DRAKE-77. ATS-3 was used for communications support.

Report Accession Nos. None

User Form Nos. 2-015

Similar Experiment Nos. 306

Primary Keywords: Data Transmission

Secondary Keywords: Argentina, Antarctic, Ships, Hydrology, Atlantic Ocean, Southern Ocean, New York, National Science Foundation (NSF)

ATS/CTS EXPERIMENT DATA

Experiment No. 318

Experiment Title DRI

Begin Date 12/76 Completion 1/77

Experimenter Desert Research Institute

Geographic Location Antarctica

Satellite ID ATS-1, 3 Frequency UHF Mode N/A

Category of Experiment Meteorology

Experiment Description

A weather radar system was installed at Palmer Station, Antarctica and is being used to study mesoscale atmospheric-ocean interactions on the Antarctic Peninsula. A VHF satellite communications system was designed, fabricated and tested for transmission of data and voice communication between Antarctica and Reno, using VHF transponders aboard NASA ATS-1 and ATS-3 satellites. Tests were made using ground stations at McMurdo (via ATS-1) and Palmer Station (via ATS-3).

Report Accession Nos. None

User Form Nos. 2-021

Similar Experiment Nos.

Primary Keywords: Meteorology

Secondary Keywords: Desert Research Institute, Antarctic, Weather, Radar, University of Nevada, Nevada

ATS/CTS EXPERIMENT DATA

Experiment No. 319

Experiment Title SIRIUS

Begin Date 12/17/76 Completion 1/15/77

Experimenter Baker Development Corporation

Geographic Location Bermuda

Satellite ID ATS-3 Frequency VHF Mode N/A

Category of Experiment Ranging & Position Fixing

Experiment Description

The Baker Development Corporation used ATS-3 to test the capability of a unique low cost, locate and rescue system to be used aboard mobiles in connection with a synchronous satellite. In this case the equipment was used aboard the "SIRIUS", which is a Morgan Out-Island 33' sloop.

Report Accession Nos. 684

User Form Nos. 2-002

Similar Experiment Nos.

Primary Keywords: Ranging, Position Fixing

Secondary Keywords: Ships, Bermuda, Search and Rescue, Sailboat

ATS/CTS EXPERIMENT DATA

Experiment No. 320

Experiment Title SAMOA - PEACESAT

Begin Date 1/77 Completion Open

Experimenter University of South Pacific

Geographic Location Hawaii, Samoa

Satellite ID ATS-1 Frequency VHF Mode N/A

Category of Experiment Education/Health Services

Experiment Description

This number was added to the PEACESAT schedule to indicate credit courses to upgrade Samoa employees. (See Exp. No. 297).

Report Accession Nos. 745

User Form Nos. None

Similar Experiment Nos. 297

Primary Keywords: Education, Health Services

Secondary Keywords: Samoa, Voice Communication, Peacesat, Hawaii, University of South Pacific

ATS/CTS EXPERIMENT DATA

Experiment No. 321

Experiment Title FLTAC

Begin Date 1/77 Completion Open

Experimenter Department of the Navy

Geographic Location Western Hemisphere

Satellite ID ATS-3 Frequency VHF Mode N/A

Category of Experiment Communication/Maritime Communications

Experiment Description

The Fleet Analysis Center currently maintains five telemetry stations at such remote locations as the Republic of the Philippines; Okinawa, Japan; Crete, Greece; Roosevelt Roads, Puerto Rico; MCAS Cherry Point, North Carolina and Norfolk, Virginia. These field stations are maintained and operated by Fleet Analysis Center personnel. It is necessary, on a daily basis, to discuss operational and logistic support details with these station personnel. There are also occasions when the transmission of low data rate digital information is required. The information exchange between the field stations and the Corona facility are currently handled on commercial and military telephone lines. These lines are at times difficult to establish, poor in quality, and costly.

The Fleet Analysis Center assembled the terminal equipment necessary for conducting a short term experiment utilizing one of the available communication satellites (ATS-3) suitable for communications between Corona, California and Roosevelt Roads Naval Station, Puerto Rico. The purpose of this experiment was to determine the viability of utilizing a satellite communications circuit for the Fleet Analysis Center communications problem. The circuit proposed was operated as a voice circuit during most of the time allocated. Some tests were conducted with low data rate digital information.

Report Accession Nos. None

User Form Nos. 2-010

Similar Experiment Nos.

Primary Keywords: Communications, Maritime Communication

Secondary Keywords: Western Hemisphere, Califorina, Puerto Rico, U.S. Navy, Fleet Analysis Center, Philippines, Japan, Greece, North Carolina, Virginia

ATS/CTS EXPERIMENT DATA

Experiment No. 322

Experiment Title WHOI (KNORR)

Begin Date 1/15/77 Completion 1/30/77

Experimenter Woods Hole Oceanographic Institute

Geographic Location Pacific/Galapagos Islands

Satellite ID ATS-3 Frequency VHF Mode N/A

Category of Experiment Communications/Voice Communications

Experiment Description

A daily schedule was maintained between research ship and base station during which audio and facsimile data were transmitted with such information as positions of satellite-tracked buoys, schematic diagrams, and plotted data. Phone patches were made to personnel preparing to join the ship at the next port and to shore-based associates for advise on work underway.

Report Accession Nos. None

User Form Nos. 2-029

Similar Experiment Nos.

Primary Keywords: Communications, Voice Communication

Secondary Keywords: Pacific, Galapagos Islands, Ships, Oceanography

ATS/CTS EXPERIMENT DATA

Experiment No. 324

Experiment Title Siple

Begin Date 2/14/77 Completion Open

Experimenter National Science Foundation/Stanford University

Geographic Location Antarctica/Canada

Satellite ID ATS-3 Frequency VHF Mode N/A

Category of Experiment Communications/Voice Communications

Experiment Description

Studies of wave-particle and wave-wave interactions using a VLF transmitting facility located at Siple Station, Antarctica. The VLF transmitting facility consists of a 150 KW transmitter and 21.2 km elevated center-fed dipole antenna.

The Siple transmitter was set up in order to achieve a controlled means of probing the magnetospheric plasma. A passive VLF receiving facility was established at the conjugate point to Siple at Roberval, Quebec, Canada.

Since the transmitter modulation, frequency, and power are key parameters in the interaction process, a real time communication link between Roberval and Quebec was required to optimize the experiment. The operator at Roberval recommends the transmitting parameters based on his observation of the behavior of the natural phenomena at Roberval.

Since using the ATS-3 communications and data link between Roberval and Siple Station the data acquired have increased by 500% and specific experiments have been conducted on a time scale of one month versus several months previously (without real time communications).

Report Accession Nos. None

User Form Nos. 2-007

Similar Experiment Nos.

Primary Keywords: Communications, Voice Communication

Secondary Keywords:
National Science Foundation
Stanford University
Antarctic
Canada
Data Transmission

ATS/CTS EXPERIMENT DATA

Experiment No. 325

Experiment Title GYRE (Ocean)

Begin Date 4/11/77 Completion 10/24/78

Experimenter National Science Foundation/Texas A&M University

Geographic Location North Atlantic, Caribbean, Gulf of Mexico

Satellite ID ATS-3 Frequency VHF Mode N/A

Category of Experiment Communications/Data Transmission

Experiment Description

The National Science Foundation sponsored a series of oceanographic research programs aboard the R/V GYRE of Texas A&M University during the summer of 1977. These involved investigations of chemistry, geochemistry, and geology in the Western North Atlantic, the Caribbean, and the Gulf of Mexico. Scientists from several institutions worked cooperatively on these projects.

ATS-3 was used to establish a communications network between the GYRE and their shore based at College Station and Galveston, Texas, to continue investigations of the utility of satellite communications to transmit oceanographic data.

Report Accession Nos. None

User Form Nos. 2-044

Similar Experiment Nos. 309

Primary Keywords: Communications, Data Transmission

Secondary Keywords: National Science Foundation, Texas A&M University, Atlantic Ocean, Caribbean, Gulf of Mexico, Texas, Ships

ATS/CTS EXPERIMENT DATA

Experiment No. 329

Experiment Title NORPAX (North Pacific Experiment)

Begin Date 5/9/77 Completion 6/30/77

Experimenter Office of Naval Research/National Science Foundation (NSF)/ University of California

Geographic Location Pacific

Satellite ID ATS-1 Frequency VHF Mode N/A

Category of Experiment Communications

Experiment Description

This work was sponsored by the Office of Naval Research and the National Science Foundation (NSF), under the NORPAX (North Pacific Experiment) program, in hopes of learning how the ocean and atmosphere interact in the Pacific to affect short term climate variations locally, and downstream over North America.

ONR/NSF established terminal to terminal data communications between a research vessel operating in the region north of Hawaii and their main scientific group in San Diego. This allowed communications and data transfer to better coordinate the vessel operations with other elements participating in this work. These included: special flights by Navy P-3 aircraft out of Adak, Alaska; NIMBUS-G RAMS tracking of buoys drifting through our region; a cooperative program of 25 freighters that took oceanographic observations.

Report Accession Nos. None

User Form Nos. None

Similar Experiment Nos.

Primary Keywords: Communications

Secondary Keywords: Oceanography, Pacific, Ships, National Science Foundation, University of California, U.S. Navy

ATS/CTS EXPERIMENT DATA

Experiment No. 330

Experiment Title Montana

Begin Date 6/1/77 Completion 11/15/77

Experimenter State of Montana/Division Communication & Forestry

Geographic Location Montana

Satellite ID ATS-3 Frequency VHF Mode N/A

Category of Experiment Communications

Experiment Description

The State of Montana used the ATS-3 to establish a reliable communication link capable of voice, low speed facsimile and data transmission between a fire base camp and the Fire Control Center during forest fires.

Report Accession Nos. None

User Form Nos. None

Similar Experiment Nos.

Primary Keywords: Communications, Data Transmission

Secondary Keywords: Montana, Firefighting , Forest Fires

ATS/CTS EXPERIMENT DATA

Experiment No. 331

Experiment Title PLU

Begin Date January 1976 Completion Open

Experimenter Project Look-up, International Christian Broadcasters

Geographic Location Latin America, Puerto Rico

Satellite ID ATS-3&6 Frequency _____ Mode _____

Category of Experiment Broadcasting

Experiment Description

ATS-6 was used broadcast programs from studios in U.S. to Puerto Rico and Virgin Islands. ATS-3 was used for voice feedback. See Experiment Number 660 for a description of the PLU demonstration.

Report Accession Nos. 764

User Form Nos. None

Similar Experiment Nos. 660

Primary Keywords: Broadcasting

Secondary Keywords: Education, Health, Puerto Rico, Christian Broadcasters, U.S. Virgin Islands, Culture

ATS/CTS EXPERIMENT DATA

Experiment No. 332

Experiment Title ENDEAVOR

Begin Date 7/22/77 Completion 1/78

Experimenter Office of Naval Research/National Science Foundation (NSF)/ University of Rhode Island

Geographic Location North Atlantic/Gulf Stream

Satellite ID ATS-3 Frequency VHF Mode N/A

Category of Experiment Communications/Data Transmission

Experiment Description

The University of Rhode Island conducted an oceanographic research program to study Gulf Stream Rings in the North-West Atlantic Ocean. This work was sponsored by the Office of Naval Research & the National Science Foundation (NSF). University of Rhode Island needed the ability to send & receive data between their Research Vessel ENDEAVOR and their short laboratory at the University of Rhode Island, so they used ATS-3 VHF Communications System in conjunction with their oceanographic field program in the transfer of such data.

Report Accession Nos. None

User Form Nos. None

Similar Experiment Nos.

Primary Keywords: Communications, Data Transmission

Secondary Keywords:

U.S. Navy
National Science Foundation
University of Rhode Island
Oceanography
Ships
Atlantic Ocean
Gulf Stream

ATS/CTS EXPERIMENT DATA

Experiment No. 333

Experiment Title UWI

Begin Date Jan. 1978 Completion June 1978

Experimenter Dept. of State, Agency for International Development

Geographic Location Jamaica, Barbados

Satellite ID ATS-3 Frequency _____ Mode _____

Category of Experiment Education

Experiment Description

The backbone of the experimental activities are an exploration of instructional and teleconferencing applications. In addition, experimentors would like to investigate other applications of narrow-band communications, such as facsimile transmission and possibly slow-scan television and data transmission, provided that those applications are technically feasible and that suitable equipment can be obtained. It is likely that their experimentation would involve satellite contacts outside the region. Probable examples of such activity are contacts with the University of the South Pacific and other members of the PEACESAT network, and with institutions in the United States, as well as their own sites in Jamaica and Barbados.

Report Accession Nos. None

User Form Nos. None

Similar Experiment Nos. _____

Primary Keywords: Education

Secondary Keywords: Jamaica
Barbados
Instruction
Teleconferencing
Facsimile

ATS/CTS EXPERIMENT DATA

Experiment No. 335

Experiment Title VHF SAR SIM

Begin Date June 1977 Completion September 1977

Experimenter Baker Development Corp.

Geographic Location Bermuda

Satellite ID ATS-3 Frequency _____ Mode _____

Category of Experiment Search and Rescue

Experiment Description

The Baker Development Corporation used ATS-3 to test the capability of a unique low cost, locate and rescue system to be used aboard mobiles in connection with a synchrounous satellite. In this case the equipment was used aboard the "SIRIUS," which is a Moegan Out-Island 33' sloop.

Report Accession Nos. 684

User Form Nos. 2-002

Similar Experiment Nos. 319

Primary Keywords: Ranging, Position Fixing

Secondary Keywords: Ships, Bermuda, Search and Rescue, Sailboat

ATS/CTS EXPERIMENT DATA

Experiment No. 336

Experiment Title ERDA/DoD

Begin Date 10/1/77 Completion 9/30/78

Experimenter Energy Research & Development Administration (ERDA)

Geographic Location Nevada/Enewetak

Satellite ID ATS-1 Frequency VHF Mode N/A

Category of Experiment Communications/Data Transmission

Experiment Description

ERDA conducted radiological survey of former nuclear test site at Enewetak to determine which areas of the atoll require clean-up so they may be returned to the people of Enewetak for beneficial use. This effort was essentially an applied research activity employing new experimental techniques which require prompt and frequent communications between Enewetak and Las Vegas. The communications link was essential to the activity so that voice and technical data could be exchanged on a timely basis. Facsimile transmisssion devices were employed to transmit data in graphic and tabular form, such as radio-activity isopleths. Voice privacy units were also employed along with clear voice transmission.

Report Accession Nos. 26, 30, 42

User Form Nos. 033, 034, 035, 041, 042

Similar Experiment Nos. 315

Primary Keywords: Communications, Data Transmission

Secondary Keywords: Nevada, Enewetak, Energy Research and Development Administration (ERDA)

ATS/CTS EXPERIMENT DATA

Experiment No. 338

Experiment Title DISP

Begin Date 12/8/77 Completion Open

Experimenter U.S. Department of the Interior

Geographic Location Washington, D.C./New York/Trust Territory

Satellite ID ATS-1&3 Frequency VHF Mode N/A

Category of Experiment Communications

Experiment Description

(Department of Interior Satellite Project) The Department of Interior Satellite Project is currently utilizing the ATS-1 in a multi-disciplined educational program for the Trust Territories at Ponape, Palau, Saipan, and Majuro, where VHF terminals are located. The DISP network will include 21 VHF stations by June, 1978, and will be augmented later in 1978 when video applications will be tested via ATS-6. The Denver facility is used to relay teleconferences between the Trust Territory locations and locations in the eastern United States in Washington, D.C., and in New York. Also, it is being used for communication among the Trust Territory Districts.

Report Accession Nos. 897

User Form Nos. None

Similar Experiment Nos.

Primary Keywords: Communications

Secondary Keywords: Department of Interior, Washington, D.C.
New York City

ATS/CTS EXPERIMENT DATA

Experiment No. 340

Experiment Title SAMOA TV (SAMFE)

Begin Date September 1977 Completion Open

Experimenter PSSC (Public Service Satellite Consortium)

Geographic Location Pacific

Satellite ID ATS-3&6 Frequency _____ Mode _____

Category of Experiment Broadcasting

Experiment Description

ATS-3 and 6 are used to deliver public broadcasting programming to station KVZK in Samoa. See Experiment Number 672.

Report Accession Nos. 922

User Form Nos. _____

Similar Experiment Nos. 661, 672

Primary Keywords: Broadcasting, Video Transmission

Secondary Keywords: Samoa, PSSC, Programming

ATS/CTS EXPERIMENT DATA

Experiment No. 342

Experiment Title Peru

Begin Date January 1978 Completion July 1978

Experimenter Adventures Unlimited

Geographic Location Peru

Satellite ID ATS-3 Frequency _____ Mode _____

Category of Experiment Voice Communications

Experiment Description

Adventures Unlimited is mounting an expedition into the uncharted rainforest of south-eastern Peru, for the purpose of positive identification of subsequent scientific investigation, to document on film and in print the process involved in mounting such an expedition. This documentation will emphasize the human story of multi-talented persons from a variety of professional backgrounds coordinating their efforts toward one common objective. They intend to produce fourteen, half-hour filmed segments for television distribution both in the United States and abroad. In addition, professional educators within the organization are devising both education packets for elementary and secondary classroom use as well as a college text.

ATS-3 will ensure the communications team constant verbal contact of each group while in the jungle and supply daily reports to the media of the expedition's progress and findings.

Report Accession Nos. None

User Form Nos. None

Similar Experiment Nos. _____

Primary Keywords: Voice Communications

Secondary Keywords: peru, Jungle, Voice, Education, Rainforest

ATS/CTS EXPERIMENT DATA

Experiment No. 343

Experiment Title Orange

Begin Date July 1979 Completion July 1979

Experimenter NSF

Geographic Location Antarctica, California

Satellite ID ATS-3 Frequency _____ Mode _____

Category of Experiment Voice Communications

Experiment Description

ATS-3 VHF will be used as communication link to coordinate research operations at Siple and Palmer stations (which are presently using ATS-3) in Antarctica with operational headquarters in Orange, California.

Report Accession Nos. None

User Form Nos. None

Similar Experiment Nos. _____

Primary Keywords: Voice Communications

Secondary Keywords: Antarctica
Siple Station
Palmer Station

ATS/CTS EXPERIMENT DATA

Experiment No. 344

Experiment Title Barbados

Begin Date Aug. 1978 Completion Sept. 1978

Experimenter Dept. of State, Agency for International Development

Geographic Location Barbados

Satellite ID ATS-3 Frequency _____ Mode _____

Category of Experiment Health

Experiment Description

The Red Cross of Barbados is using ATS-3 satellite to receive information and training from the American Red Cross Organization in the latest techniques of Cardio-pulmonary Resuscitation (CPR).

Report Accession Nos. None

User Form Nos. None

Similar Experiment Nos. 333

Primary Keywords: Health

Secondary Keywords: American Red Cross
CPR
Barbados

SECTION 2.2

ATS-6 EXPERIMENT DATA FORMS

ATS/CTS EXPERIMENT DATA

Experiment No. 601

Experiment Title Radio Frequency Interference Measurement

Begin Date June 1974 **Completion** December 1976

Experimenter NASA/GSFC/Telecommunications Systems

Geographic Location U.S.

Satellite ID ATS-6 **Frequency** _____ **Mode** _____

Category of Experiment Wave Propagation

Experiment Description

The frequency band from 5.925 to 6.425 GHz is served by fixed satellites and by terrestrial microwave links. There is a possibility of microwave links pointed at the horizon causing interference to the uplinks of domestic and international communications satellites sharing the same frequency band. A mathematical model has been derived for predicting the fields at geostationary orbit based on the known characteristics and known distribution of the terrestrial microwave relay system. The ATS-6 is sensitive to signals in the range of 10 dBW radiated in the direction of the satellite. Signals in the range of 10-30 dBW have been recorded over various parts of the United States.

Report Accession Nos. 593

User Form Nos. None

Similar Experiment Nos. _____

Primary Keywords: Radio Frequency Interference, Microwave Transmission, ATS-6

Secondary Keywords: Electromagnetic Measurement, Radio Relay Systems, Mathematical Model

ATS/CTS EXPERIMENT DATA

Experiment No. 602

Experiment Title Very High Resolution Radiometer (VHRR)

Begin Date June 1974 Completion September 1974

Experimenter NASA/GSFC - ITT/Aerospace Div.

Geographic Location U.S.

Satellite ID ATS-6 Frequency _____ Mode _____

Category of Experiment Meteorology

Experiment Description

The Very High Resolution Radiometer (VHRR) on ATS-6 was used to accurately determine cloud motion and improve methods of estimating surface temperature. The VHRR recorded high spatial and radiance resolution data in the visible and infrared window. The system consisted of a high precision, scanning, two-channel radiometer which looked at Earth, a digital-data transmission system from the satellite to Earth, a special computer-augmented digital formatting and quick-look processing ground station system, and the computers at NASA/GSFC. Several hundred images were taken during the summer of 1974. Data collection terminated when the chopper motor failed.

Report Accession Nos. 766, 846

User Form Nos. None

Similar Experiment Nos. _____

Primary Keywords: Radiometer, ATS-6, Meteorology

Secondary Keywords: Winds, Clouds, Storms

ATS/CTS EXPERIMENT DATA

Experiment No. 603

Experiment Title Radio Astronomy Interference

Begin Date June 1974 Completion June 1975

Experimenter NASA/GSFC ATS-6 Project (In House)

Geographic Location World

Satellite ID ATS-6 Frequency _____ Mode _____

Category of Experiment _____

Experiment Description

2670 MGH transponder is on the edge of the radio astronomy band. EXP was to measure interference level.

Report Accession Nos. _____

User Form Nos. _____

Similar Experiment Nos. _____

Primary Keywords: Radio Astronomy, Interference

Secondary Keywords: ATS-6, NASA/GSFS

ATS/CTS EXPERIMENT DATA

Experiment No. 604

Experiment Title SAPPSAC

Begin Date June 1974 **Completion** Jan 1975

Experimenter NASA/GSFC

Geographic Location U.S.

Satellite ID ATS-6 **Frequency** _____ **Mode** _____

Category of Experiment Satellite Control

Experiment Description

The Space Craft Attitude Precision Pointing & Skewing Adaptive Controls Experiment (SAPPSAC) was to demonstrate the ability to maintain precise attitude stabilization in a fixed direction for an extended period of time in the presence of all disturbing inputs using the ground attitude control command link with automatic execution. The system is a real-time, feedback, attitude control loop.

Report Accession Nos. 766

User Form Nos. None

Similar Experiment Nos. 607, 610

Primary Keywords: ATS-6, SAPPSAC

Secondary Keywords: Attitude control, telemetry, feedback

ATS/CTS EXPERIMENT DATA

Experiment No. 605

Experiment Title PLACE

Begin Date Sept. 1974 Completion June 1975

Experimenter NASA

Geographic Location U.S.

Satellite ID ATS-6 Frequency _____ Mode _____

Category of Experiment Ranging

Experiment Description

The satellite was used to test the NASA PLACE ranging system. This system employs CW tones to provide a non-ambiguous range measurement. Four translated tones, equivalent to 25Hz, 175Hz, 1225Hz, and 8575Hz are phase modulated onto a carrier and transmitted from the ground station to the mobile unit via ATS-6. The mobile modem acts as a transponder, demodulating and retransmitting the received tones via the satellite to the ground station. The returned tones are processed by the ground station to determine round-trip delay and hence two-way range to the mobile unit.

Report Accession Nos. 552, 605, 685, 686, 687

User Form Nos. None

Similar Experiment Nos. 265,657,664

Primary Keywords: Ranging, PLACE

Secondary Keywords: L-Band
Modem Evaluation
Phased Array
Bit-Error Rates

ATS/CTS EXPERIMENT DATA

Experiment No. 606

Experiment Title Radio Beacon

Begin Date June 1974 **Completion** 7/79

Experimenter NOAA, Space Environment Lab

Geographic Location U.S., W. Germany, India

Satellite ID ATS-6 **Frequency** _____ **Mode** _____

Category of Experiment Wave Propagation

Experiment Description

The Radio Beacon transmits phase-coherent continuous waves at carrier frequencies of 40.016 MHz, 140.056 MHz, and 360.144 MHz and at the major sideband frequencies of 40.11604 MHz, 41.0164 MHz, 141.0564 MHz, 360.24404 MHz and 361.1444 MHz. The phase and amplitude of the right and left-hand circular polarized waves are recorded at a number of different ground stations and inter-compared so as to provide a measure of (1) the total columnar electron content from the satellite to the ground station, (2) the Faraday rotation, which is used to determine the ionospheric content to an altitude of about 2000 Km, (3) the plasmaspheric content above 2000 Km, and (4) amplitude and phase scintillations.

Report Accession Nos. 590, 766, 910

User Form Nos. 012, 2-035

Similar Experiment Nos. _____

Primary Keywords: Wave Propagation, ATS-6, Scintillations

Secondary Keywords: Ionosphere
Faraday Effect
Polarized Electromagnetic Radiation
Radio Beacons

ATS/CTS EXPERIMENT DATA

Experiment No. 607

Experiment Title Interferometer High Speed Data Rate Acqu Systems (IHDRAS

Begin Date Jan 1974 **Completion** July 1975

Experimenter NASA/GSFC

Geographic Location U.S.

Satellite ID ATS-6 **Frequency** _____ **Mode** _____

Category of Experiment Satellite Control

Experiment Description

The ATS-6 RF interferometer is utilized primarily as a precision 3-axis attitude sensor having an unambiguous field of view of 35°. This function required two separated ground transmitters, each using one of the two available frequency channels or sharing a single channel by time multiplexing. For 3-axis control, one uplink transmitter provided 2-axis attitude (pitch and roll) with other sensors (e.g., a Polaris tracker) providing yaw attitude. By utilizing two uplink transmitters and the Earth sensor or three time multiplexed uplink transmitters, the interferometer also provided measurements of ATS-6 spacecraft orbit position. Uplink frequencies were 6.150 and 6.155 GHz. The receiving antennas were spaced at 19.95 wavelengths (λ) for the vernier baseline and 1.66 λ for the coarse baseline.

As an attitude sensor, the interferometer has demonstrated the ability to provide stabilization to better than 0.004° for 43 min and projected long term stability to the order of 0.01°. Better than 10-km spacecraft position measurement uncertainty was demonstrated over a 2-min interval using the interferometer and Earth sensor. For longer convergence intervals, the bias uncertainties in the Earth sensor produce uncertainties in the orbit less than 80 to 100 km.

Report Accession Nos. 766, 864

User Form Nos. None

Similar Experiment Nos. 604, 610

Primary Keywords: ATS-6, Interferometer

Secondary Keywords: IHDRAS, Spacecraft Position

ATS/CTS EXPERIMENT DATA

Experiment No. 608

Experiment Title Propagation (EUR)

Begin Date Aug. 1975 **Completion** Oct. 1976

Experimenter ESTEC

Geographic Location Western Europe

Satellite ID ATS-6 **Frequency** _____ **Mode** _____

Category of Experiment Wave Propagation

Experiment Description

Various microwave (13 & 18GHz) and millimeter wave (20 & 30GHz) experiments were performed on ATS-6 by European scientists while it was in position for the SITE experiment. The experiments were coordinated by ESA. The 13 and 18GHz experiment (COMSAT) involves the transmission of data to the satellite, which re-transmits it to a large ground station with an automatic data acquisition system. The 20 and 30 GHz experiment (MMW) involves the reception and analysis of beacon signals at these frequencies in order to study the degrading affects of the atmosphere on their propagation.

Report Accession Nos. 797, 798, 825

User Form Nos. None

Similar Experiment Nos. 244, 245, 609, 638, 658, CTS-1

Primary Keywords: Wave Propagation, Millimeter Wave

Secondary Keywords: Europe
COMSAT

ATS/CTS EXPERIMENT DATA

Experiment No. 609

Experiment Title MMW

Begin Date June 1974 **Completion** 7/79

Experimenter NASA/GSFC

Geographic Location U.S.

Satellite ID ATS-6 **Frequency** _____ **Mode** _____

Category of Experiment Wave Propagation

Experiment Description

This experiment involves the reception of 20 and 30 GHz beacon signals from ATS-6 by 11 ground stations in the U.S. Studies are directed at an evaluation of rain attenuation, scintillations, depolarization, site diversity, coherence bandwidth, and analog and digital communications. Three modes of operation are used: continuous wave, multitone, and communications. The parabolic antenna is used when a narrow spot beam is required and the horn antennas are used for wide coverage.

The U.S. experiment was interrupted from Aug. 1975 to Oct. 1976 when the ATS-6 was in position over India for the SITE experiment.

The ground stations were:

1. NASA/GSFC, Rosman, NC
2. Univ. of Texas, Austin, Texas
3. Ohio State Univ., Columbus, OH
4. COMSAT Laboratories, Clarksburg, VA
5. Westinghouse Electric Co., Baltimore, MD
6. Naval Research Laboratory, Waldox, MD
7. NASA/GSFC, Greenbelt, MD
8. Virginia Polytechnic Institute, Blacksburg, VA
9. Battelle Laboratories, Richland, WA
10. Bell Laboratories, Holmdel, NJ
11. U.S. Army, Ft. Monmoth, NJ

Report Accession Nos. 513, 553, 595, 916

User Form Nos. None

Similar Experiment Nos. 244, 245, 608, 638, 658, CTS-1

Primary Keywords: Millimeter Wave, Wave Propagation

Secondary Keywords: Rain Attenuation
Bandwidth
Depolarization
Scintillation

ATS/CTS EXPERIMENT DATA

Experiment No. 610

Experiment Title Interferometer

Begin Date June 1974 **Completion** July 1975

Experimenter NASA/GSFC

Geographic Location U.S.

Satellite ID ATS-6 **Frequency** _____ **Mode** _____

Category of Experiment Satellite Control

Experiment Description

The ATS-6 RF interferometer is utilized primarily as a precision 3-axis attitude sensor having an unambiguous field of view of 35°. This function required two separated ground transmitters, each using one of the two available frequency channels or sharing a single channel by time multiplexing. For 3-axis control, one uplink transmitter provided 2-axis attitude (pitch and roll) with other sensors (e.g., a Polaris tracker) providing yaw attitude. By utilizing two uplink transmitters and the Earth sensor or three time multiplexed uplink transmitters, the interferometer also provided measurements of ATS-6 spacecraft orbit position. Uplink frequencies were 6.150 and 6.155GHz. The receiving antennas were spaced at 19.95 wavelengths (λ) for the vernier baseline and 1.66λ for the coarse baseline.

As an attitude sensor, the interferometer has demonstrated the ability to provide stabilization to better than 0.004° for 43 min and projected long term stability to the order of 0.01°. Better than 10-km spacecraft position measurement uncertainty was demonstrated over a 2-min interval using the interferometer and Earth sensor. For longer convergence intervals, the bias uncertainties in the Earth sensor produce uncertainties in the orbit less than 80 to 100 km.

Report Accession Nos. 766,864

User Form Nos. None

Similar Experiment Nos. 604, 607

Primary Keywords: ATS-6, Interferometer

Secondary Keywords: IHDRAS, Spacecraft position

ATS/CTS EXPERIMENT DATA

Experiment No. 612

Experiment Title HET (ARC)

Begin Date Sept. 1974 Completion May 1975

Experimenter University of Washington Medical School

Geographic Location Alaska, Washington

Satellite ID ATS-6 Frequency _____ Mode _____

Category of Experiment Education, Health

Experiment Description

The Washington-Alaska-Montana-Idaho (WAMI) ATS-6 experiment built upon experience gained in an on-going experiment in regional medical education which started in 1970. The WAMI experiment focused on: (1) expanding basic science instruction to first-year medical students enrolled in, but not located at, the University of Washington (UW) School of Medicine; (2) determining the usefulness of television interaction in evaluating a medical student's clinical progress, and in investigating the value of the satellite for training at clinical units located in small communities; and (3) exploring the use of television as a substitute for face-to-face contact in the many administrative, coordination and counseling activities in a widely dispersed organization. The UW was linked by ATS-6 to the University of Alaska (UA) and a community clinic site in Omak, a city of 4,400 in the state of Washington.

The university phase of the experiment (between the UW and UA) was the only experiment in the ATS-6 series which had full, duplex capability. This capacity came close to approximating a face-to-face exchange. Three areas of programming were defined for the university phase: curriculum, administration, and patient care. There were thirty-four, 75-minute telecasts between the UW and UA.

The community phase of the experiment involved transmissions between the UW Medical School and the Family Medical Center in Omak. The Family Medical Center is a small, private-practice group. Medical students were at the center in successive six-week periods and student residents on a rotation basis. Twenty, 75-minute segments were telecast between the UW and Omak. The community phase of the experiment also had three areas of concern: student case presentations, continuing education for medical personnel and medical consultation.

Report Accession Nos. 511, 515, 527, 555, 562, 652, 690, 746, 780, 792, 840, 871

User Form Nos. None

Similar Experiment Nos. CTS-13

Primary Keywords: Education, Health

Secondary Keywords: WAMI, HET Experiments, Alaska, University of Washington, Medical Education, Telecommunication, Teleconsultation

ATS/CTS EXPERIMENT DATA

Experiment No. 612

Experiment Title HET (ARC)

Begin Date Sept. 1974 Completion May 1975

Experimenter Alaska Indian Health Service

Geographic Location Alaska

Satellite ID ATS-6 Frequency _____ Mode _____

Category of Experiment Health

Experiment Description

The Indian Health Service Experiment explored the feasibility of using teleconsultation as a means of improving the effectiveness of primary health care at the rural village site. Two local clinics in Alaska were linked by ATS-6 to a regional Service Unit Hospital in Tanana where doctors were available for consultation. Medical support was provided by specialists and other medical personnel in Anchorage. In-service training materials for local health aides and health-education lectures for villagers were also transmitted.

Five sites were equipped for this experiment. Three installations (Tanana Service Unit Hospital and two village clinics) could receive and send both audio and video. A fourth site was at the Alaska Native Health Center in Fairbanks and was linked to KUAC-TV facilities at the University of Alaska. Fairbanks was a back up for Tanana but in fact, Fairbanks did not participate in the IHS experiment. However, Fairbanks was used in the WAMI experiment.

The Alaska Native Medical Center in Anchorage received video and receive/transmit audio. Anchorage monitored all transmissions and was the coordinating site for the IHS ATS-6 experiment. The coordinator, a physician, also participated in the teleconsultations when necessary and arranged for the involvement of other specialists. In a teleconsultation, the primary health-care person at the clinic presented the patient for consultation. The three ATS-6 audio channels which were not involved in the basic video/audio transmissions could be used to transmit biomedical data including EKG's and heart and lung sounds. Scramblers were used in transmitting teleconsultations to protect the privacy of the patients. From Sept. 1974 to May 1975, there were 109, one-hour consultations. A total of 245 patients were involved in 323 presentations and ten specialists were contacted.

Report Accession Nos. 508, 511, 572, 573, 579, 690

User Form Nos. None

Similar Experiment Nos. 300, 677

Primary Keywords: Health

Secondary Keywords: Indian Health Service, HET Experiments, Teleconsultation
Tanana
Alaska
Video Communication

ATS/CTS EXPERIMENT DATA

Experiment No. 612

Experiment Title HET(ARC)

Begin Date Sept. 1974 **Completion** May 1975

Experimenter Veteran Administration

Geographic Location Appalachia

Satellite ID ATS-6 **Frequency** _____ **Mode** _____

Category of Experiment Health Care

Experiment Description

During the period from July 10, 1974 to May 19, 1975, 69 programs, divided among five types of experimental designs, were broadcast to ten VA hospitals in the Appalachian Region over ATS-6. Each hospital was provided with a telephone linkage to a Denver television studio where programs originated, so that two-way communication was possible during all broadcasts.

The goal of the VA/ATS-6 experiment was to compare kinds of communications with various types of audiences. Therefore, many narrow target programs were included in the broadcast schedules, along with programs intended for more general audiences. The audience range extended from patients and their families to the physican-specialist interested in new diagnostic techniques. The five types of experiments or "events" were: (1) video seminars, (2) grand rounds, (3) out-patient clinics, (4) teleconsultations, and (5) computerized events.

The video seminars were the most frequent type of program (38) and the best attended. Attendance averaged about 400 per program, about 40 per hospital. For each of the 17 grand rounds, attendance averaged about 182. Although hampered by technological problems, the teleconsultations were enthusiastically received by physicians and consultants. The average attendance for the ten events was 158. The three out-patient clinics had the highest average attendance (226). The computerized events which were primarily engineering experiments were hampered by technical difficulties.

Report Accession Nos. 567, 573, 576, 625, 675, 690, 780, 792

User Form Nos. None

Similar Experiment Nos. CTS-11

Primary Keywords: Health

Secondary Keywords: Veterans Administration, HET Experiments, Video Seminars, Grand Rounds, Out-Patient Clinics, Teleconsultation

ATS/CTS EXPERIMENT DATA

Experiment No. 612

Experiment Title HET (ARC)

Begin Date Sept. 1974 Completion May 1975

Experimenter State of Alaska

Geographic Location Alaska

Satellite ID ATS-6 Frequency _____ Mode _____

Category of Experiment Education

Experiment Description

In an attempt to learn how to design and implement future satellite systems, the Governor's Office of Telecommunications coordinated the development and transmission of about 150 hours of satellite programming for 14 intensive and four comprehensive sites in Alaska. Most sites were small isolated villages in which Alaska natives were the primary audience. Programs were developed in five areas with most creative effort going into an oral language development course for four to seven-year-olds, a health education series for elementary school students, and a topical "magazine" format series for adults. Consumer committees participated in the design and development of most programs.

The primary objectives of the educational experiment were to install and operate an experimental satellite communication system and to gain technical experience with which to plan future systems. GOT used the experiment as an opportunity to define the goals of a future system and to gain the experience necessary to undertake concrete, informed discussions with potential suppliers so that the state could lead, rather than follow, in the development of needed satellite-based services and equipment.

The Alaska education experiment began preliminary work in 1972. Negotiations with the National Aeronautics and Space Administration resulted in a weekly allocation of 4 hours and 45 minutes of satellite transmission time.

Report Accession Nos. 539, 567, 573, 623, 688, 689, 690, 832, 939, 951

User Form Nos. None

Similar Experiment Nos. _____

Primary Keywords: Education

Secondary Keywords: HET Experiments
Alaska
Rural Education
Video Communication

ATS/CTS EXPERIMENT DATA

Experiment No. 612

Experiment Title HET(ARC)

Begin Date Sept. 1974 Completion May 1975

Experimenter Federation of Rocky Mountain States

Geographic Location Western U.S., Rocky Mountain Area

Satellite ID ATS-6 Frequency _____ Mode _____

Category of Experiment Education

Experiment Description

The Satellite Technology Demonstration (STD) transmitted programming to 68 sites in the Rocky Mountain Region. Three original programs were designed and produced: (1) a junior high school career education course; (2) an in-service, teacher-training course in career education; and (3) an adult evening series targeted for residents of isolated, rural communities. Existing films and tapes, selected as supplementary or enrichment materials, were also transmitted for recording and viewing by school audiences. The STD conducted an extensive data collection and analysis effort which assessed audience characteristics, student performance, and viewer acceptance.

The STD served eight states including the members of the Federation of Rocky Mountain States--Colorado, Idaho, Montana, New Mexico, Utah, and Wyoming--and two non-member states--Arizona and Nevada.

Career education was selected as the major content area for the bulk of STD programming. This decision was based on federal funding agency priorities, regional interest, and local parent and teacher interest. Since a review of the career education literature indicated that the junior high school audience was the most neglected in existing materials, this group was chosen as the primary audience.

There were 68 operational sites. Twenty-four (three in each state) had the capacity to receive satellite transmissions and to transmit and receive live audio for direct interaction during educational programming. In addition to these 24 "intensive" sites, 32 sites were selected for installation of "receive-only" equipment. Finally, 12 public television stations in the eight-state region were selected to receive satellite transmissions for relay to homes.

Report Accession Nos. 567, 573, 621, 627, 690, 725, 812

User Form Nos. None

Similar Experiment Nos. CTS-19

Primary Keywords: Education

Secondary Keywords: Federation of Rocky Mountain States, HET Experiments
Satellite Technology Demonstration (STD)
Career Education
Video Transmission
Rocky Mountain

ATS/CTS EXPERIMENT DATA

Experiment No. 612

Experiment Title HET (ARC)

Begin Date June 1974 Completion Open

Experimenter Appalachian Regional Commission (ARC)

Geographic Location Appalachia

Satellite ID ATS-6 Frequency _____ Mode _____

Category of Experiment Education, College

Experiment Description

The Appalachian Educational Satellite Program regularly broadcasts graduate courses and workshops in Education and Health areas from the University of Kentucky to over 45 remote stations throughout Appalachia. The AESP emphasizes the "interactive" capabilities of satellite communications, and encourages students to talk with their professors during the broadcasts. Broadcasts are video & audio one-way over ATS-6, then students can talk back via landlines and/or ATS-3.

Courses broadcast of ATS-6 are conducted like regular college classes, with the exception that the professor appears on television. "Course monitors" represent the professor when he/she is off-air, hand out assignments and collect homework. Tests, term papers, projects, etc. are graded by course specialists at the University of Kentucky.

The AESP has made frequent use of commercial satellites and cable television stations, and will eventually switch over to commercial carriers. They also have plans to expand and become the first nationwide Public Service Network in May 1979. The AESP/PSN will deliver 35 hours of college courses, workshops, and public service programs weekly to interested cable television stations over RCA's Stacoms.

The AESP broadcasts were initiated in 1974 and terminated in June 1975 when ATS-6 was moved to India. The satellite returned in late 1976, but for various reasons the AESP program did not restart until 1978.

Report Accession Nos. 567, 573, 622, 690, 723, 754, 871, 938

User Form Nos. None

Similar Experiment Nos. 286, CTS-12

Primary Keywords: Education, College Education

Secondary Keywords: HET Experiments
Appalachian Regional Commission (ARC)
Appalachian Educational Satellite Program (AESP)
Appalachia
Rural Education

ATS/CTS EXPERIMENT DATA

Experiment No. 617

Experiment Title Tracking and Data Relay Exp (TDRE)

Begin Date September 1974 **Completion** July 1979

Experimenter NASA/GSFC

Geographic Location North & South America

Satellite ID ATS-6 **Frequency** _____ **Mode** _____

Category of Experiment Data Transmission / Satellite Control

Experiment Description

ATS-6 was used to control low orbit satellite equipment through relay command data transmission. The relay system allowed all normal ground station functions to be performed on the low orbit satellites. ATS-6 was also used to track near-Earth satellites so that orbit computations could be made without the aid of multiple ground station tracking.

Report Accession Nos. 766, 865, 874, 902, 911

User Form Nos. _____

Similar Experiment Nos. 620

Primary Keywords: ATS-6, Data Transmission, Ranging

Secondary Keywords: NIMBUS, GEOS, Trilateration, Meteorology

ATS/CTS EXPERIMENT DATA

Experiment No. 618

Experiment Title Television Relay Using Small Terminals (TRUST)

Begin Date September 1974 Completion 7/75

Experimenter NASA/GSFC

Geographic Location U.S.

Satellite ID ATS-6 Frequency _____ Mode _____

Category of Experiment Data Transmission

Experiment Description

The Television Relay Using Small Terminals (TRUST) Experiment was designed to advance and promote the technology of broadcasting satellites. A constant envelope television FM signal was transmitted at C band to the ATS-6 Earth coverage hom and retransmitted at 860 MHz through the 9-m antenna to a low-cost direct-readout ground station. The experiment demonstrated that high-quality television and audio can be received by low-cost direct-receive ground stations. Predetection bandwidths significantly less than predicted by Carson's rule can be utilized with minimal degradation of either monochrome or color pictures. Two separate techniques of duel audio channel transmission have been demonstrated to be suitable for low-cost applications.

Report Accession Nos. 597,766

User Form Nos. _____

Similar Experiment Nos. 612,647

Primary Keywords: ATS-6, TRUST, Data Transmission

Secondary Keywords: Video Communications, Ground Stations, Television Rel

ATS/CTS EXPERIMENT DATA

Experiment No. 620

Experiment Title GEOS-C

Begin Date September 1974 Completion July 1979

Experimenter NASA/GSFC

Geographic Location North & South America

Satellite ID ATS-6 Frequency _____ Mode _____

Category of Experiment Data Transmission

Experiment Description

ATS-6 was used to control low orbit satellite equipment through relay command data transmission. The relay system allowed all normal ground station functions to be performed on the low orbit satellites. ATS-6 was also used to track near-Earth satellites so that orbit computations could be made without the aid of multiple ground station tracking.

Report Accession Nos. 766, 865

User Form Nos. _____

Similar Experiment Nos. 617

Primary Keywords: ATS-6, Data Transmission, Ranging

Secondary Keywords: GEOS, Trilateration

ATS/CTS EXPERIMENT DATA

Experiment No. 623

Experiment Title L-Band Spatial Correlation Experiment

Begin Date August 1976 Completion January 1977

Experimenter University of Pa. & Communications Research Center

Geographic Location Pennsylvania

Satellite ID ATS-6 Frequency _____ Mode _____

Category of Experiment Broadcasting

Experiment Description

Phase differences between L-Band and CW signals received at widely separated ground stations were used to measure phase spatial correlation. Two receivers were used, each being made up of a 4-ft. dish (RCP), a low noise amplifier, mixer, IF amplifier (42 MHz center frequency) and a buffer which serves as a line driver for the cables carrying the IF signals. Common local oscillator power at 1508 MHz was piped to the receivers by low loss cables each extending up to 500 ft. The IF outputs were fed into a vector voltmeter which measured the phase difference between the two CW signals. Hard copies of the result were made with a paper chart recorder.

Report Accession Nos. None

User Form Nos. 2-028

Similar Experiment Nos. _____

Primary Keywords: Broadcasting, Technology

Secondary Keywords: Communications, University of Pennsylvania, L-Band

ATS/CTS EXPERIMENT DATA

Experiment No. 631

Experiment Title Environmental Measurements Exp (EME)

Begin Date June 1974 **Completion** January 1977

Experimenter NASA/GSFC

Geographic Location U.S.

Satellite ID ATS-6 **Frequency** _____ **Mode** _____

Category of Experiment Scientific

Experiment Description

The environmental measurements experiment (EME) package is a group of eight experiments carried on board the ATS-6 to study the spacecraft environment at synchronous altitude and to gain information on electromagnetic-ionospheric interactions. Six of the experiments are designed to obtain data on charged particles of several different types and over wide energy ranges. A seventh experiment is to provide magnetic field data, to be used in conjunction with the charged particle measurements to determine the dynamic processes which take place in the synchronous orbit environment. The eights experiment is a continuation of previous ATS engineering studies into solar cell degradation.

The support equipment includes a command decoder that accepts data word commands from two spacecraft command addresses producing 78 EME commands and a telemetry encoder that accepts the experiment's data and formats it into an 1800 bit/sec sequence complete with synch words and clock.

Report Accession Nos. 766, 884, 885, 886, 887, 888, 889, 890, 891, 909

User Form Nos. _____

Similar Experiment Nos. _____

Primary Keywords: ATS-6, Magnetosphere, EME, Satellite Environment

Secondary Keywords: Energetic Particles, Electron-Proton Spectrometer, Cosmic Rays

ATS/CTS EXPERIMENT DATA

Experiment No. 638

Experiment Title COMSAT PROP (Indian)

Begin Date March 1975 **Completion** July 1975

Experimenter COMSAT Laboratories

Geographic Location Europe

Satellite ID ATS-6 **Frequency** _____ **Mode** _____

Category of Experiment Wave Propagation

Experiment Description

In June 1975, ATS-6 was moved into position for the SITE program for India. During this period the satellite was used for various microwave experiments called the COMSAT experiment (13 & 18 GHz) and the millimeter wave experiment (20 & 30 GHz). For the COMSAT experiment, ESA operated the ground transmitting stations located in several European countries. Power supply problems limited data collection by about 10 hours per day. Comsat Labs was responsible for the data analysis.

Report Accession Nos. 797

User Form Nos. _____

Similar Experiment Nos. 244, 245, 608, 609, 658, CTS-1

Primary Keywords: Wave Propagation, Site Diversity

Secondary Keywords: Rain Attenuation, Millimeter Waves, COMSAT

ATS/CTS EXPERIMENT DATA

Experiment No. 639

Experiment Title All Demo

Begin Date June 1974 **Completion** 7/79

Experimenter NASA

Geographic Location U.S.

Satellite ID ATS-6 **Frequency** _____ **Mode** _____

Category of Experiment Demonstration

Experiment Description

Demonstrations of ATS-6 communications were scheduled on this number.

Report Accession Nos. None

User Form Nos. None

Similar Experiment Nos. _____

Primary Keywords: Demonstration

Secondary Keywords: NASA, Communications

ATS/CTS EXPERIMENT DATA

Experiment No. 640

Experiment Title Apollo-Soyuz Test Project (ASTP)

Begin Date October 1974 Completion July 1975

Experimenter NASA-Houston

Geographic Location Earth Orbit

Satellite ID ATS-6 Frequency _____ Mode _____

Category of Experiment Communications

Experiment Description

Relay data between Apollo-Soyuz and Houston. Technique increased time of contact from 15 min to 55 min. Also, ATS-6 was used to track Apollo-Soyuz. These satellite-to-satellite trackings were used for orbit determination and gravity anomaly detection.

Report Accession Nos. 540, 906, 907, 908

User Form Nos. None

Similar Experiment Nos. _____

Primary Keywords: Apollo-Soyuz Test Project, Gravity Anomalies

Secondary Keywords: Satellite-to-Satellite Tracking, Geodynamics, ATS-6

ATS/CTS EXPERIMENT DATA

Experiment No. 647

Experiment Title SITE (Satellite Instructional Television Experiment)

Begin Date Aug. 1975 Completion Aug. 1976

Experimenter Government of India

Geographic Location India

Satellite ID ATS-6 Frequency _____ Mode _____

Category of Experiment Broadcasting

Experiment Description

The Satellite Instructional Television Experiment (SITE) took place when the ATS-6 was moved to orbit over India for a year. Special programs developed in India on family planning, agriculture, and nationalism were broadcast daily to approximately 2400 rural villages. The purpose was to evaluate the effect of TV in promoting rural development.

Some programming was directed at teachers of primary grades to help improve teaching methods.

Report Accession Nos. 255, 532, 538, 597, 706, 831, 826, 896

User Form Nos. None

Similar Experiment Nos. _____

Primary Keywords: Broadcasting, Program Evaluation

Secondary Keywords: India, Education,
SITE
Rural Areas

ATS/CTS EXPERIMENT DATA

Experiment No. 649

Experiment Title Electro-Magnetic Environment Studies

Begin Date 1 April 1975 Completion 10 June 1975

Experimenter NASA/GSFC

Geographic Location

Satellite ID ATS-6 Frequency Mode

Category of Experiment Scientific

Experiment Description

Classified Experiment

Report Accession Nos. None

User Form Nos. None

Similar Experiment Nos.

Primary Keywords:

Secondary Keywords:

ATS/CTS EXPERIMENT DATA

Experiment No. 650

Experiment Title Magnetometer Data Collection Platform (UCLA)

Begin Date May 1975 **Completion** August 1976

Experimenter UCLA P.J. Coleman

Geographic Location U.S.

Satellite ID ATS-6 **Frequency** _____ **Mode** _____

Category of Experiment Scientific

Experiment Description

Properties of the magnetosphere.

Important phenomena which can be monitored with a magnetometer on a satellite in synchronous orbit can be divided into two classes: changes due to macroscopic current systems, and hydromagnetic waves. The first class includes the magnetopause boundary currents, the ring current, the tail current, and field aligned currents coupling the magnetospheric plasma to the ionosphere. The second class includes a variety of ULF wave phenomena about whose generation very little is presently known.

The primary objective of the University of California at Los Angeles' (UCLA) fluxgate magnetometer on Applications Technology Satellite-6 (ATS-6) is to add a body of empirical data pertaining to the magnetic field at synchronous orbit. A secondary objective is to monitor continuously this field in order to provide input data for models of the time-varying configuration of the magnetosphere. Specific goals within the primary objective concern the properties of the magnetosheath; the properties of the magnetopause; the interaction of the solar wind with the dayside magnetosphere and the geomagnetic tail; the changes in field caused by magnetospheric substorms; the development of the ring current; and the properties of hydromagnetic waves in these various regions of space.

Report Accession Nos. 884, 891

User Form Nos. _____

Similar Experiment Nos. 631

Primary Keywords: Magnetosphere, Fluxgate Magnetometer

Secondary Keywords: UCLA, Perturbations, EME

ATS/CTS EXPERIMENT DATA

Experiment No. 657

Experiment Title CRC

Begin Date September 1974 Completion August 1977

Experimenter Communications Research Center

Geographic Location Ontario, Canada

Satellite ID ATS-6 Frequency C,L, UHF Mode

Category of Experiment Air Traffic Control, Data Transmission

Experiment Description

The CRC used the ATS-6 for the following experiments:

(a) this was a multi-frequency experiment which measured direct path fading at VHF, L-band, C-band, and MMW, and measured reflection coefficients at VHF and L-band for vertical, horizontal and circular polarizations;

(b) two implementations of a DECPSK data modem were operated in an aeronautical satellite environment to evaluate effect of specular and diffuse multipath on bit error rate performance. The modem bit rates used were 1200 and 2400 bps;

(c) four representative voice modulation techniques, narrow band frequency modulation, delta modulation, pulse duration modulation and a zero-crossing (band limiting) PSK technique were evaluated in airborne trials using MRT and PB work list scales under varying conditions of ocean multipath and carrier-to-noise density ratios in the range 40 to 49 dB-Hz;

(d) the performance of two types of aircraft antenna systems was evaluated. One was a system of low gain antennas requiring three elements located on the aircraft, the optimum being switch selected, and the second was a 9 element linear phased array with automatic beam steering.

Report Accession Nos. 549, 552, 686, 687, 734, 775, 776, 777, 778, 779

User Form Nos. 2-030, 2-031, 2-032

Similar Experiment Nos.

Primary Keywords: Air Traffic Control, Data Transmission

Secondary Keywords: Frequency, Millimeter Wave, L-Band, Communication Research Center, C-Band, Canada, Fading, UHF

ATS/CTS EXPERIMENT DATA

Experiment No. 658

Experiment Title COMSAT Prop (U.S.)

Begin Date June 1974 Completion 1975

Experimenter COMSAT LABS

Geographic Location Eastern U.S.

Satellite ID ATS-6 Frequency _____ Mode _____

Category of Experiment Wave Propagation

Experiment Description

The ATS-6 Comsat Propagation Experiment (CPE) was designed to gather statistical data on attenuation caused by rain and snow at 13 and 18 GHz. These data will be used to determine system design parameters for future communications satellite systems operating at frequencies above 10 GHz. The experiment used 25, 18 GHz, and 15, 13 GHz unattended ground transmitters at twenty-five locations in the eastern US to transmit to the ATS-6. The ATS-6 transponder converts the carriers to frequencies around 4150 MHz and transmits these signals to the Comsat large horn antenna/data acquisition and receiving facility at Andover, Maine.

Report Accession Nos. 594

User Form Nos.

Similar Experiment Nos. 244, 245, 608, 609, 638, CTS-1

Primary Keywords: Wave Propagation, Site Diversity

Secondary Keywords: Rain Attenuation, Comsat, Microwave

ATS/CTS EXPERIMENT DATA

Experiment No. 660

Experiment Title PLU

Begin Date Jan. 1976 Completion 7/79

Experimenter Project Look-up, International Christian Broadcasters

Geographic Location Latin America, Puerto Rico

Satellite ID ATS-3&6 Frequency _____ Mode _____

Category of Experiment Broadcasting

Experiment Description

Programming for 90 minutes each day is being prepared by Project Look Up. Program sources are film producers, public TV, university libraries, and religious education groups. For the first thirteen weeks most programming will be contracted. For the subsequent time of the experiment about half of the programs will be created in Puerto Rico and the Virgin Islands. Tapes are shipped to NASA's uplink facilities at Rosman, North Carolina for transmission to the ATS-6. Programs are beamed to Puerto Rico and the Virgin Islands and received by ground receivers for group viewing of re-broadcast through cable systems. Programs are accompanied by work materials so that PLU will be able to interact with respondents in a controlled manner. A diploma of recognition will be provided the participants in the courses. The experiment is being monitored and studied by statisticians to indicate behaviorial change in the control groups.

Report Accession Nos. 764

User Form Nos. None

Similar Experiment Nos. 331

Primary Keywords: Broadcasting

Secondary Keywords: Education, Health
Puerto Rico , Christian Broadcasters
U.S. Virgin Islands , Culture

ATS/CTS EXPERIMENT DATA

Experiment No. 661

Experiment Title ALFE (Alaska Feed Experiment)

Begin Date September 1977 **Completion** August 1978

Experimenter PSSC (Public Service Satellite Consortium)

Geographic Location Alaska

Satellite ID ATS-6 **Frequency** _____ **Mode** _____

Category of Experiment Broadcasting

Experiment Description

ALFE (Alaska Feed Experiment). The goal of the ALFE Experiment is to deliver public broadcast programming to Alaskan audiences in a timely fashion. PBS programs are delivered to the Rocky Mountain Public Broadcast Network (RMPBN) in Denver; ATS-6 transmissions originate from RMPBN which is co-located with the PSSC Denver facility. Receive sites in Alaska are located at station KAKM in Anchorage, and station KUAC in Fairbanks.

The ALFE experiment concluded in August of 1978, when the delivery moved from an experimental to regular-operations mode; at that time, the WESTAR system was employed to deliver public broadcast programming to over 150 public television stations throughout Alaska.

Report Accession Nos. 922

User Form Nos. _____

Similar Experiment Nos. 672

Primary Keywords: Broadcasting, Video Transmission

Secondary Keywords: Alaska, PSSC, ATS-6

ATS/CTS EXPERIMENT DATA

Experiment No. 663

Experiment Title UWI

Begin Date Oct. 1978 Completion 7/79

Experimenter Agency for International Development (AID)

Geographic Location West Indies

Satellite ID ATS-6 Frequency _____ Mode _____

Category of Experiment Education, Broadcasting

Experiment Description

Broadcast educational programs to citizens in the West Indies. One-way video and two-way audio.

Report Accession Nos. _____

User Form Nos. None

Similar Experiment Nos. 333

Primary Keywords: Education, Broadcasting

Secondary Keywords: West Indies
Adult Education
AID

ATS/CTS EXPERIMENT DATA

Experiment No. 664

Experiment Title SAR (L-Band C/O)

Begin Date Aug. 1974 **Completion** Apr. 1975

Experimenter DOT/TSC/FAA/Boeing/USCG/Canada/ESA

Geographic Location North Atlantic/U.S.A

Satellite ID ATS-6 **Frequency** _____ **Mode** _____

Category of Experiment Air Traffic Control

Experiment Description

This experiment number was used for several experiments in air and sea communications.

In one, DOT/TSC collected satellite-aircraft signal data, evaluated avionics hardware designs, and performed preliminary satellite voice and data communications demonstration tests in support of an aeronautical satellite system for oceanic airspace (AEROSAT), and advanced system concepts for air traffic control over the United States (CONUS).

In another, a two-way simultaneous communications link was established between a U.S. Coast Guard cutter and the NASA Rosman earth station, testing an experimental antennae. Communications and one-way ranging was accomplished using a variety of modems. The communications modems provided for both voice and data transmission, and the channel probing equipment was capable of broadband and CW operation.

Report Accession Nos. 549, 552, 670, 686, 687, 734, 777, 778, 844

User Form Nos. 2-014, 2-020

Similar Experiment Nos. 265, 605, 657

Primary Keywords: Air Traffic Control

Secondary Keywords: Atlantic Ocean, Boeing
L-Band, Aircraft Antenna
F.A.A., Ship-to-Shore

ATS/CTS EXPERIMENT DATA

Experiment No. 666

Experiment Title UHF/NRL

Begin Date September 1977 Completion May 1978

Experimenter Communications Sciences Division, Naval Research Laboratory

Geographic Location U.S.

Satellite ID ATS-6 Frequency _____ Mode _____

Category of Experiment Radar

Experiment Description

The experiment made use of ATS-6 UHF transmitter and selected ground receiving equipment in a system for demonstrating the capabilities and problems of satellite bistatic radar. The principal investigator was L.S. Wagner. Experiment is classified.

Report Accession Nos. None

User Form Nos. _____

Similar Experiment Nos. _____

Primary Keywords: ATS-6, Bistatic Radar, UHF

Secondary Keywords: Naval Research Lab

ATS/CTS EXPERIMENT DATA

Experiment No. 667

Experiment Title ALVA (Alaska/Veterans Administration Experiment)

Begin Date September 1977 Completion July 1979

Experimenter PSSC (Public Service Satellite Consortium)

Geographic Location Alaska/Western U.S.

Satellite ID ATS-6, CTS Frequency _____ Mode _____

Category of Experiment Health/Education

Experiment Description

ALVA (Alaska/Veterans Administration Experiment). Utilizing both ATS-6 and CTS, the ALVA Experiment is able to link the Alaska Area Native Health Service (AAHS) at Anchorage with the Veterans Administration's CTS Experiment. The Denver facility provides the interconnect capability between the ATS-6 and CTS.

The Veterans Administration has established an experimental network which is examining biomedical applications on CTS; this VETSAT network is being utilized in a health/communications experiment intended to determine future applications for satellite communications in this area of medical information exchange. The ground system of the VETSAT network consists of a mobile earth station capable of transmitting video and audio to thirty receive sites located at VA hospitals in the western United States.

Report Accession Nos. 922

User Form Nos. _____

Similar Experiment Nos. _____

Primary Keywords: Health, Education

Secondary Keywords: Alaska, VETSAT, Veterans Administration, Medical Information

ATS/CTS EXPERIMENT DATA

Experiment No. 668

Experiment Title Motorola

Begin Date July 1977 Completion September 1978

Experimenter RF Systems Lab/Motorola, Inc., Schaumburg, IL 60196

Geographic Location U.S.

Satellite ID ATS-6 Frequency _____ Mode _____

Category of Experiment Communication, Wave Propagation

Experiment Description

Excess path loss over Free-space loss was measured for the land-mobile case as a function of (1) local environment, (2) vehicle heading, (3) link frequency, (4) satellite elevation angle, and (5) street side. An excess path loss model was developed from the data for prediction of temporal/spatial coverage. Small scale signal behavior was characterized through level crossing rates and average fade durations.

Report Accession Nos. _____

User Form Nos. _____

Similar Experiment Nos. _____

Primary Keywords: ATS-6, Excess Path Loss, Land-Mobile

Secondary Keywords: Link Frequency, Fade Duration, Signal Behavior Crossing Rate

ATS/CTS EXPERIMENT DATA

Experiment No. 670

Experiment Title TEAM

Begin Date Sept. 1977 Completion 7/79

Experimenter Montana State University

Geographic Location Montana

Satellite ID ATS-6 Frequency _____ Mode _____

Category of Experiment Education

Experiment Description

Televised Education Applied to Montana (TEAM) is an experiment to determine the feasibility of using satellites to conduct educational programs in sparsely populated areas. The experiment has not started because of the need for funding to buy ground terminals for two-way video programming.

Report Accession Nos. None

User Form Nos. 2-008

Similar Experiment Nos. 330, 612

Primary Keywords: Education, Adult Education

Secondary Keywords: Montana State University
Tele-Education
Agriculture

ATS/CTS EXPERIMENT DATA

Experiment No. 671

Experiment Title MSH

Begin Date Mar. 1976 Completion 1978

Experimenter Mountain States Health Corp. (MSHC)

Geographic Location Rocky Mts.

Satellite ID ATS-6 Frequency _____ Mode _____

Category of Experiment Health Service

Experiment Description

MSHC (Mountain States Health Corporation Experiment). The MSHC Experiment utilized the ATS-6 to disseminate refresher training materials to emergency medical technicians in Montana. The Emergency Medical Training (EMT) refresher course developed by MSHC, concentrated on the upgrading of skills of EMT's as well as critical-care nurses and emergency room support personnel. The ATS-6 receive site for the MSHC experiment was located at the Flathead Valley Community College in Kalispell, Montana. Transmissions took place from the Rocky Mountain Public Broadcast Network and the PSSC Denver facility.

Report Accession Nos. 922

User Form Nos. 2-004

Similar Experiment Nos. _____

Primary Keywords: Health, Education

Secondary Keywords: Emergency Medical Training
Rocky Mountain

ATS/CTS EXPERIMENT DATA

Experiment No. 672

Experiment Title SAMFE (Samoa Feed Experiment)

Begin Date September 1977 Completion 2/78

Experimenter PSSC (Public Service Satellite Consortium)

Geographic Location Pacific

Satellite ID ATS- 3&6 Frequency _____ Mode _____

Category of Experiment Broadcasting

Experiment Description

SAMFE (Samoa Feed Experiment). SAMFE is a project involved in the delivery of public broadcast programming. The receive site in Samoa is located at station KVZK. Previous to the experiment, public broadcast programming was available to Samoan audiences through the mailing of tapes, which were received as much as two weeks later than the original "airing" time of the programs.

Report Accession Nos. 922

User Form Nos. _____

Similar Experiment Nos. 340, 661

Primary Keywords: Broadcasting, Video Transmission

Secondary Keywords: Samoa, PSSC, Programming

ATS/CTS EXPERIMENT DATA

Experiment No. 673

Experiment Title NIE (National Institute for Education/DHEW)

Begin Date January 1978 Completion July 1979

Experimenter Appalachian Regional Commission, Washington, D.C.

Geographic Location Appalachia

Satellite ID ATS-6 Frequency _____ Mode _____

Category of Experiment Education

Experiment Description

When ATS-6 went up ARC used the satellite to deliver education to the Appalachian area of the U.S. This was part of the HET program. In the summer of 1975, ATS-6 was moved to India and the HET program was interrupted. ATS-6 returned in the summer of 1976 and ARC renewed its satellite program. The education courses offered after 1976 were primarily at the graduate level and were an outgrowth of the planning phase that took place while ATS-6 was over India. The courses involved in class activities, videotapes, and teleconferences which gave the students an opportunity to talk to experts in their field via the ATS-6.

Report Accession Nos. 770, 814, 823

User Form Nos. _____

Similar Experiment Nos. 612

Primary Keywords: ATS-6, Appalachian Regional Commission, Education

Secondary Keywords: Appalachia, Teachers, Telecommunications

ATS/CTS EXPERIMENT DATA

Experiment No. 674

Experiment Title GE L-Band

Begin Date December 1977 **Completion** July 1979

Experimenter General Electric Co., Schenectady, N.Y. 12301

Geographic Location Eastern U.S.

Satellite ID ATS-6 **Frequency** _____ **Mode** _____

Category of Experiment Communications, Ranging

Experiment Description

(1) Equip five over-the-road trucks and a dispatch base station with voice communications by satellite. Trucking company is Smith Transfer, Staunton, VA. Area served is Georgia to Pennsylvania, west to Nebraska. Experiment control and data recording are at GE Observatory near Schenectady, NY. Experiment modified to equip two search and rescue jeeps of Air Force for use in simulated and actual disaster relief and search and rescue missions. (NAS5-24365, 12/77-8/79)

(2) Test a new GE concept that requires only one active ranging-communication satellite. A ship on the Great Lakes or an inland waterway will be equipped with a mobile communications radio adapted for ATS-6 and a tone-code ranging responder. The ship will also carry a receiver for timing signals from the NOAA GOES satellite. When the ship is interrogated via ATS-6, its response will include timing information derived from the GOES signal. Ship positions will be computed at GE's Radio Optical Observatory. (NAS5-25135, 12/78-10/79)

Report Accession Nos. No reports at this time.

User Form Nos. None

Similar Experiment Nos. 228, 234, 310, 319, 657, 664

Primary Keywords: ATS-6, Communications, Navigation

Secondary Keywords: Search and Rescue, GOES, Position, Ranging

ATS/CTS EXPERIMENT DATA

Experiment No. 677

Experiment Title IHS (Indian Health Services)

Begin Date Sept. 1978 Completion 7/79

Experimenter Indian Health Services

Geographic Location Alaska

Satellite ID ATS-6 Frequency _____ Mode _____

Category of Experiment Health Services , Communications

Experiment Description

The Indian Health Service in Alaska is using the ATS-6 to deliver medical care to natives in several remote villages. This is a continuation of the work done prior to ATS-6 being moved to India in 1974-75. Health clinics at Galena and Fort Yukon have been equipped with two-way video & audio satellite hardware. Pictures of in-patients are sent to physicians in Tanana, Bethel, and Anchorage over ATS-6. EKG, X-rays, and voice are sent via RCA's Satcom I. Patient records can be retrieved via satellite from a computer in Tuscon, Arizona. As the data comes in, the doctors make their diagnosis and instruct the health aides in the remote clinics in how to administer treatment. In some cases, doctors will turn the picture around and show the aides what to do.

This same equipment is used in teleconsultation between physicians and aides at various locations.

Report Accession Nos. 508, 511, 572, 573, 579, 690, 11, 40, 43, 52, 54, 60

User Form Nos. None

Similar Experiment Nos. 227, 300, 612

Primary Keywords: Health, Communications

Secondary Keywords: Indian Health Service
Medicine
Telemedicine
Rural Areas
Alaska

SECTION 2.3

U.S. CTS EXPERIMENT DATA FORMS

ATS/CTS EXPERIMENT DATA

Experiment No. CTS-1

Experiment Title CLCE - Communication Link Characteristic

Begin Date Feb 1976 Completion Open

Experimenter NASA/Goddard, L. Ippolito

Geographic Location GSFC (Maryland, Ohio, Virginia, NC, Texas)

Satellite ID CTS Frequency _____ Mode _____

Category of Experiment Broadcasting, Technology

Experiment Description

The Communications Link Characterization Experiment (CLCE) was designed to measure and evaluate the effects of the earth-space path environment, both natural and man-made, on the communications links of the Communications Technology Satellite (CTS). Two areas of analysis were considered: propagation effects on the CTS uplinks, downlinks, and the beacon, were measured and evaluated in the Propagation Effects Evaluation portion of the CLCE. The second area of investigation, the Environmental Effects Evaluation, measured and characterized man-made, earth-based signals which could interfere with the 14.0-14.3 gigahertz up-link frequency band of the geostationary CTS.

The potential for interference between users is particularly acute when one of the users is an earth-space uplink, since the received signal at the satellite is very weak and hence sensitive to external transmissions in the same band. A pre-launch survey of known users in the 14.0-14.3 gigahertz band indicated very few potential interferers; measurements with the CTS verified the expected signal levels and validate models developed for the coordination and management of the frequency spectrum for future applications.

Report Accession Nos. 780, 792, 802, 898, 899, 900, 979, 980

User Form Nos. None

Similar Experiment Nos. 244, 245, 608, 609, 638, 658

Primary Keywords: Broadcasting, Technology

Secondary Keywords: Propagation, Environment, CTS

ATS/CTS EXPERIMENT DATA

Experiment No. CTS-4A

Experiment Title Mobile Analysis and Telecommunication

Begin Date Nov 1978 Completion Open

Experimenter NASA/Ames, B. Gibbs

Geographic Location California, Oregon

Satellite ID CTS Frequency _____ Mode _____

Category of Experiment Communications, Transportable Terminal

Experiment Description

NASA/Ames outfitted a van (MATE) as a mobile satellite telecommunications terminal. The capabilities of this terminal were demonstrated for two groups in 1978, but then the van was destroyed by fire.

A new van (MATE2) is now being readied.

Report Accession Nos. 877

User Form Nos. None

Similar Experiment Nos. CTS-6, CTS-20

Primary Keywords: Communications, Terminals

Secondary Keywords: Test Equipment, Mobile Communications, CTS

ATS/CTS EXPERIMENT DATA

Experiment No. CTS-4

Experiment Title College Curriculum Sharing

Begin Date Oct 1976 Completion July 1979

Experimenter NASA/Ames, Stanford University, Carleton University

Geographic Location California, Canada

Satellite ID CTS Frequency _____ Mode _____

Category of Experiment Education, College

Experiment Description

This was a curriculum-sharing experiment enabling students in one university to take courses in another, thousands of miles away, via satellite. The experiment featured real-time digital video compression with channel error correction coding to reduce transmission bandwidth and power requirements.

Engineering classes and seminars at Stanford University in California were televised to Carleton University 2500 miles away in Ottawa, Canada, and vice-versa. In addition, scientists and engineers at NASA/Ames Research Center, location of the experiment's west coast earth station, engaged in three-way video conferences with the two participating universities.

The communication capabilities permitted operation in two primary modes. One mode allowed classes to be transmitted simultaneously from Stanford to Carleton and from Carleton to Stanford with audio feedback for each class. This was done via a single digital stream in each direction, where the audio was digitized and multiplexed with the digital video. A second mode of operation provided full duplex video for two-way video teleconferencing experiments such as special discussion seminars, student counseling, problem sessions.

This experiment demonstrated the economic feasibility of using video relay satellites not only for curriculum sharing, but also for continuing adult and professional education, and for holding conferences without participants having to travel.

Report Accession Nos. 555, 744, 780, 792

User Form Nos. None

Similar Experiment Nos. 612

Primary Keywords: Education

Secondary Keywords: NASA, Digital Systems, Video Transmission, CTS

ATS/CTS EXPERIMENT DATA

Experiment No. CTS-6

Experiment Title Transportable Emergency Earth Terminal

Begin Date May 1976 Completion July 1979

Experimenter COMSAT Laboratories, J. Kaiser

Geographic Location Maryland

Satellite ID CTS Frequency _____ Mode _____

Category of Experiment Communications, Transportable Terminal

Experiment Description

The COMSAT experiment was designed to demonstrate that a highly transportable small earth terminal can quickly establish reliable communications via the Communications Technology Satellite (CTS) between the site of a disaster and relief and coordination agencies. For this experiment COMSAT fabricated a lightweight earth terminal which can be transported to a disaster area by a small van, helicopter, or even a small boat. The terminal can be set up by two persons and be operational in less than one hour.

The small terminal consisted of an antenna unit with a rugged metalized fiberglass antenna of 1.2 meters (4') diameter mounted on a sturdy, lightweight tripod. Some of the electronics were on the tripod; the remainder were contained in several light-weight boxes. An AC power generator operable on gasoline or liquid propane gas made the terminal completely self-contained. The other end of the communications link consisted of a larger earth terminal using a 4.56 meter (15') diameter antenna mounted on a modified boat trailer. For most parts of the experiment, the terminal was located at the COMSAT Laboratories in Clarksburg. Communications messages were relayed between the terminal at the COMSAT Labs and the American Red Cross Headquarters in Washington, D.C.

Report Accession Nos. 555, 780, 792

User Form Nos. 2-038

Similar Experiment Nos. CTS-4A, CTS-20

Primary Keywords: Communications, Terminals

Secondary Keywords: Test Equipment, COMSAT, CTS

ATS/CTS EXPERIMENT DATA

Experiment No. CTS-7

Experiment Title Biomedical Communications

Begin Date Jun 1977 Completion July 1979

Experimenter Lister Hill National Center, E. Henderson

Geographic Location United States

Satellite ID CTS Frequency _____ Mode _____

Category of Experiment Health Services, Communications

Experiment Description

The Public Health Service (PHS) of the Department of Health, Education and Welfare is conducting a large number of experiments on CTS to explore the potential of satellite communications for solving immediate and future communications needs identified by the health community. The Lister Hill National Center for Biomedical Communications, a component of the National Library of Medicine, is coordinating the health experiments. The experiments under Lister Hill are (1) NCAST (Nursing Child Assessment Satellite Training), (2) Dietitians Workshop (3) Dental Education (4) Drug Prevention (5) Drug Treatment Teleconference (6) MEDLINE Training Seminar (7) Health Teleconferences Seminar (8) WAMI - Faculty sharing and independent learning (9) Research Dissemination (10) Health Curricular Resource Sharing.

Report Accession Nos. 780, 783, 784, 792, 840, 848, 877

User Form Nos. None

Similar Experiment Nos. CTS-11, CTS-13, CTS-17

Primary Keywords: Health Services, Communications

Secondary Keywords: Telemedicine, Medical Services
Lister Hill , Health Education
Medical Communications
CTS

ATS/CTS EXPERIMENT DATA

Experiment No. CTS-11

Experiment Title Health/Communications

Begin Date Oct 1976 Completion July 1979

Experimenter Veteran's Administration, R. Shamaskin

Geographic Location Western United States

Satellite ID CTS Frequency _____ Mode _____

Category of Experiment Health Services, Communications

Experiment Description

In ATS-6, five categories of types of communications were employed to present selected subjects for target audiences, as appropriate, physicians, nurses, LPNs, nursing assistants, patients, and families of patients. They were: Grand Rounds; Video Seminars; Computer Assisted Instruction; Outpatient Clinics for Patients and Families; Teleconsultations - Slow Scan; both black-and-white and color were used for a slow scan or compressed video transmissions.

CTS programs will concentrate in six areas: Teleconsultations; VA National Medical Satellite Journal; Patient Education; Continuing Education for Professionals; Allied Health Programming and Management/Teleconferences.

Report Accession Nos. 555, 562, 780, 792

User Form Nos. 2-040

Similar Experiment Nos. CTS-7, CTS-13, CTS-17

Primary Keywords: Health Services, Communications

Secondary Keywords: Medical Communications, Teleconsultation
Teleconferencing, CTS
Medical Education, Veterans Administration
Video Transmission

ATS/CTS EXPERIMENT DATA

Experiment No. CTS-12

Experiment Title Appalachian Educational Satellite Project II

Begin Date Pending Completion

Experimenter Appalachian Regional Commission, H. Morse

Geographic Location Appalachia

Satellite ID CTS Frequency Mode

Category of Experiment Education, College

The Appalachian Educational Satellite Project demonstration initiated programming in 1974. Programming was terminated in 1975 when ATS-6 was moved to India for the SITE project. The satellite returned in late 1976, but for various reasons the AESP program did not restart until 1978. (See Exp. No. 612)

AESP II, which is a continuation of the ATS-6 program, is being planned for the CTS. The status of AESP II is presently classified as pending.

Report Accession Nos. 567, 573, 622, 690, 723, 754, 780

User Form Nos. None

Similar Experiment Nos. 286, 612, CTS-16, CTS-29

Primary Keywords: Education

Secondary Keywords: Appalachian Regional Commission, Appalachian Education Satellite Project (AESP), CTS

ATS/CTS EXPERIMENT DATA

Experiment No. CTS-13

Experiment Title Communication Support for Decentralized Education

Begin Date Jun 1977 Completion July 1979

Experimenter University of Washington, WAMI Program

Geographic Location Washington, Alaska, Montana

Satellite ID CTS Frequency _____ Mode _____

Category of Experiment Education, Health Services, College, Medical

Experiment Description

The WAMI experiments investigate the practical use of satellite telecommunications in a program which decentralizes basic medical science education into four state universities and conducts part of the clinical training at fifteen sites in thirteen communities in the Northwest area. The University of Washington School of Medicine is conducting four sub-experiments with the faculty and first-year students at universities in Washington, Alaska, and Montana, and with fourth-year students and residents at selected community clinics. A fifth sub-experiment involves state government officials and health care consumers.

The specific demonstrations are: (1) continuing education for physicians (2) science education for first year medical students (3) interviewing medical school applicants and providing interactive programs to minority students on career choices (4) patient consultation between doctors at UW Medical Center and doctors in remote areas (5) programs directed at legislators responsible for health care and education decisions.

Report Accession Nos. 511, 515, 527, 562, 565, 652, 690, 746, 780, 792, 877

User Form Nos. None

Similar Experiment Nos. CTS-7, CTS-11, CTS-17

Primary Keywords: Education, Health Services

Secondary Keywords: Telecommunication, Medical Education, Medical Students, Remote Regions, WAMI, Teleconsultation, CTS

ATS/CTS EXPERIMENT DATA

Experiment No. CTS-15

Experiment Title Communication in Lieu of Transportation

Begin Date May 1976 Completion July 1979

Experimenter Westinghouse, H. Nunnally

Geographic Location Ohio, Maryland

Satellite ID CTS Frequency _____ Mode _____

Category of Experiment Communication, Conference

Experiment Description

The prime objective of the Westinghouse experiment is to test the hypothesis that a large geographically-dispersed industrial organization can economically use a communications satellite coupled with low-cost earth terminals effectively to exchange information necessary to conduct business by video, audio and hardcopy media as an alternative to personal travel.

The Westinghouse CTS experiment is being conducted in two phases. Phase I (pre-launch) began in mid-1975 and lasted for six months. During this phase, all support equipment and facilities were configured and utilized to simulate actual satellite teleconferencing. Phase II (post-launch) continues the experimentation via CTS, using teleconference rooms designed from data acquired in Phase I.

The Westinghouse earth terminals and CTS will link the Defense and Electronic Systems Center in Baltimore, Maryland to the Aerospace Electrical Division in Lima, Ohio. Each location is equipped with a small earth terminal to send and receive conference video/audio signals. The ground systems will each consist of full-duplex FM analog television transmitting and receiving facilities. The facilities will employ a ten-foot parabolic antenna at Lima and a fifteen-foot antenna at Baltimore.

Report Accession Nos. 780, 792, 829

User Form Nos. None

Similar Experiment Nos. CTS-18, CTS-26

Primary Keywords: Communications, Conferences

Secondary Keywords: Teleconferencing, Westinghouse Electric Co., Transportation, Video Transmission, CTS

ATS/CTS EXPERIMENT DATA

Experiment No. CTS-16

Experiment Title Project Interchange

Begin Date Mar 1976 Completion Jun 1978

Experimenter Archdiocese of San Francisco, D. Green

Geographic Location California

Satellite ID CTS Frequency _____ Mode _____

Category of Experiment Education, Teacher

Experiment Description

The primary focus of Project Interchange is to serve as facilitator in the dissemination and diffusion of validated innovative programs supported by the U.S. Office of Education under Title III of the Elementary and Secondary Education Act (ESEA).

With the use of teleconferencing, Project Interchange is designed to stimulate teacher initiative and creativity; present expertise on solving educational problems; provide means for initiating or expanding innovative instructional programs without significant additional cost; facilitate inservice education among teachers and principals; build positive teacher attitudes toward the use of technology in educational practice.

Project Interchange has already demonstrated that it can accelerate the development of positive teacher attitudes and teacher competencies that are prerequisite to the proper design and development of appropriate electronic support systems.

Report Accession Nos. 555, 562, 708, 780, 792

User Form Nos. 2-027

Similar Experiment Nos. CTS-12, CTS-29

Primary Keywords: Education, Teacher Education

Secondary Keywords: INTERCHANGE, Tele-education, CTS

ATS/CTS EXPERIMENT DATA

Experiment No. CTS-17

Experiment Title Health Education TV

Begin Date Pending Completion

Experimenter Association of Western Hospitals, K. Johnson

Geographic Location Rocky Mountains

Satellite ID CTS Frequency Mode

Category of Experiment Health Services, Education

Experiment Description

No information available.

Report Accession Nos. None

User Form Nos. None

Similar Experiment Nos.

Primary Keywords: Health Services, Education

Secondary Keywords: Health Education, CTS

ATS/CTS EXPERIMENT DATA

Experiment No. CTS-18

Experiment Title Interactive Techniques for Intra-NASA Applications

Begin Date Apr 1976 **Completion** Open

Experimenter NASA/Goddard, J. Chitwood

Geographic Location Maryland, Ohio, California

Satellite ID CTS **Frequency** _____ **Mode** _____

Category of Experiment Communication, Conferences

Experiment Description

This experiment links together three NASA Centers through the CTS by two-way video and audio. The three NASA Centers involved are the Ames Research Center in California, the Goddard Space Flight Center in Maryland, and the Lewis Research Center in Ohio. In addition, the close proximity between NASA Headquarters in Washington, D.C., and Goddard enables Headquarters personnel to enter into a teleconference with Ames or Lewis by using the ground station at Goddard. This is done by interconnecting the Headquarters teleconferencing facility with the Goddard station by video and audio lines. This experiment is testing the hypothesis that NASA can effectively use teleconferencing through a high power communications satellite to manage its wide-spread activities effectively in spite of smaller travel budgets, increased travel costs, and a need for energy conservation.

Some of the specific problem areas addressed in this experiment are the effects of atmospheric parameters on transmission quality, effective security, and size of ground stations necessary to provide teleconferencing capability.

Report Accession Nos. 780, 792

User Form Nos. None

Similar Experiment Nos. CTS-15, CTS-26

Primary Keywords: Communications, Conferences

Secondary Keywords: Teleconferencing, NASA, CTS

ATS/CTS EXPERIMENT DATA

Experiment No. CTS-19

Experiment Title Satellite Distribution Experiment

Begin Date Dec 1976 Completion July 1979

Experimenter Southern Educational Communications Association (SECA)

Geographic Location Southern U.S.

Satellite ID CTS Frequency _____ Mode _____

Category of Experiment Education, Elementary, Secondary

Experiment Description

The SECA experiment is designed to determine the feasibility of satellite distribution of program material to television broadcast stations for rebroadcast purposes. The program material to be distributed in the course of the experiment is principally oriented for instructional use in elementary and secondary schools, or for evening viewing by an adult audience. Secondary experiments are proposed in exchange of program material over widely scattered regions of the United States and in the distribution of high quality and multi-channel audio and radio material.

Each of the participating noncommercial television broadcast stations provides at it's own expense a receiving terminal for use during the course of the experiment. The nominal receive terminal consists of a 3.0 meter fiberglass antenna with electronics similar to standard terrestial microwave hardware. The NASA facility in Rosman provides the uplink for the experiment. In later phases of the experiment, it is expected that certain of the receive-only sites be converted to add uplink capability.

Report Accession Nos. 555, 562, 780, 792

User Form Nos. 2-043

Similar Experiment Nos. _____

Primary Keywords: Education

Secondary Keywords: Television, Tele-education, CTS

ATS/CTS EXPERIMENT DATA

Experiment No. CTS-20

Experiment Title Advanced Ground Receiving Equipment Experiment (AGREE)

Begin Date April 1976 Completion April 1978

Experimenter NASA/Goddard & NHK (Broadcasting Corp. of Japan)

Geographic Location California, Florida, Ohio, Virginia, Maryland

Satellite ID CTS Frequency _____ Mode _____

Category of Experiment Broadcasting, Technology

Experiment Description

The Advanced Ground Receiving Equipment Experiment is designed to measure and evaluate the performance of relatively low cost ground terminals operating with the CTS under conditions simulating an operational broadcasting satellite system environment.

Development of low cost ground receiving equipment has been underway in many countries for some time. In particular, several manufacturers in Japan have developed low cost ground receiving equipment under the guidance of the Technical Research Laboratories of Nippon Hoso Kyokai (NHK). These equipments have been developed for use in the Japanese Broadcasting Satellite (JBS) experimental system which is scheduled to begin in Mid-1978. This CTS experiment provided an early opportunity to evaluate these earth stations under actual field conditions.

Report Accession Nos. 780, 792

User Form Nos. None

Similar Experiment Nos. CTS-4A, CTS-6 , CTS-30

Primary Keywords: Broadcasting, Technology

Secondary Keywords: Test Equipment, Japan, Terminals, Receivers, Technology Assessment, Technology Utilization, CTS

ATS/CTS EXPERIMENT DATA

Experiment No. CTS-21

Experiment Title Public Service Satellite Experiment

Begin Date Feb 1977 Completion July 1979

Experimenter Public Service Satellite Consortium (PSSC), R. Mott

Geographic Location Colorado

Satellite ID CTS Frequency _____ Mode _____

Category of Experiment Communications, Support

Experiment Description

The Public Service Satellite Consortium is directed to exploring, encouraging, and accelerating the use of communications satellites so that promising public service applications of telecommunications can become operational. A principal hypothesis is that substantial benefits can be realized if diverse but compatible public service applications are aggregated through cooperative planning, scheduling, and technical operation. The PSSC structure and its relationship to potential users, the experience and expertise of the staff, and the existing facilities and technical elements can support and maximize use of CTS.

Objectives

- The PSSC will encourage and assist maximum public service usage of the CTS communications network.
- The PSSC will provide technical support to public service users.
- The PSSC will develop an information system which will collect, process, and make available data on organizational, technical, and financial effects.
- The PSSC will analyze the organizational, technical and financial experimental elements of the CTS work of experimenters who choose to cooperate.

Report Accession Nos. 780, 877

User Form Nos. None

Similar Experiment Nos. _____

Primary Keywords: Communications

Secondary Keywords: Public Service Satellite Consortium, CTS

ATS/CTS EXPERIMENT DATA

Experiment No. CTS-22

Experiment Title Arctic Ice Information

Begin Date Aug 1976 Completion Sept 1976

Experimenter NASA/Lewis, R. Gedney

Geographic Location Arctic Ocean, Alaska, Ohio

Satellite ID CTS Frequency _____ Mode _____

Category of Experiment Communication, Support

Experiment Description

The objective of this experiment was to demonstrate the capability and usefulness of providing photographic quality SLAR ice information to a joint military-civilian vessel operations center located at Barrow, Alaska. This ice information was relayed to vessel-barge convoys attempting to resupply both military facilities and commerical oil drilling operations along the Alaskan North Shore.

The SLAR used in this demonstration is a Motorola AN/APS-94C system and it is currently mounted in a U.S. Coast Guard C-130B aircraft. Operating in the X-band at a frequency of 9.245 GHz (3.245 cm wavelength) using a real aperture antenna, this radar transmits and receives horizontally polarized radiation. For SLAR missions this aircraft is flown at an altitude of 3.35 kilometers (11,000 feet) and at an average speed of 280 knots. Refer to NASA TMS-71815 for more details.

Data was transmitted to NASA/LERC where it was analyzed. The results were sent to Barrow via CTS.

Report Accession Nos. 748, 780, 792

User Form Nos. None

Similar Experiment Nos. _____

Primary Keywords: Communications

Secondary Keywords: Ice, Arctic Ocean, Facsimile, CTS

ATS/CTS EXPERIMENT DATA

Experiment No. CTS-24

Experiment Title Digitally Implemented Communications Experiment (DICE)

Begin Date Jun 1977 Completion July 1979

Experimenter NASA/Lewis & COMSAT, H. Jackson

Geographic Location Ohio, Maryland

Satellite ID CTS Frequency _____ Mode _____

Category of Experiment Broadcasting, Technology

Experiment Description

The Digitally Implemented Communications Experiment (DICE) is being performed to evaluate the technical and economic possibilities of using digital compression in video communication links.

Data are taken on carrier-to-noise and correlated with up- and down-link transmission variables such as weather conditions, antenna location and deployment/configuration of system components. Tranmission parameters are recorded at both stations through the test. In addition, information on frequency, transmitter power, bit rate and other pertinent channel parameters is gathered. Picture quality is rated for video compression techniques and error coding as a function of link parameters.

Report Accession Nos. 780, 790, 792

User Form Nos. None

Similar Experiment Nos. _____

Primary Keywords: Broadcasting, Technology

Secondary Keywords: Communications, Digital Systems, Telecommunication, CTS

ATS/CTS EXPERIMENT DATA

Experiment No. CTS-25

Experiment Title Videoconferencing for Congress

Begin Date Apr 1977 Completion Aug 1978

Experimenter George Washington University, F. Wood

Geographic Location United States

Satellite ID CTS Frequency _____ Mode _____

Category of Experiment Communications, Conference

Experiment Description

This experiment is part of a long-term research effort in Congressional communications. Videoconferencing is being used by members of Congress to communicate with their staffs and constituents. Specific areas of application are (1) hearings (2) meetings with constituents and (3) information retrieval. The advantages and disadvantages of videoconferencing, as perceived by the participants, will be the data of interest in this demonstration.

Report Accession Nos. 780, 792, 839

User Form Nos. None

Similar Experiment Nos. _____

Primary Keywords: Communications, Conferences

Secondary Keywords: Teleconferencing, Congress, Video Tranmission, CTS

ATS/CTS EXPERIMENT DATA

Experiment No. CTS-26

Experiment Title Project ADJUNCT

Begin Date Sep 1977 Completion Feb 1978

Experimenter Satellite Business Systems, C. Rush

Geographic Location Virginia

Satellite ID CTS Frequency _____ Mode _____

Category of Experiment Data Transmission, Communications

Experiment Description

Project ADJUNCT was set up to use state-of-the-art capabilities available today in order to learn more about the business applications and the equipment capability requirements of tomorrow. The demonstration concentrated on three application areas: data processing, teleconferencing, and document distribution. For each area, the impact on operational procedures and business structure due to new communications technology was explored, the technology required to implement possible scenarios examined, and the transitional period between current and future systems investigated.

High speed digital communications applications of full motion and freeze-frame video, high speed data transfer, remote high speed retrieval, data processing backup, load leveling-resource sharing, and electronic mail (high speed digital facsimile and high speed communicating word processing) were investigated. Live teleconferences were set up for personnel of participating companies to use as a substitute for travel. Project ADJUNCT works with participating companies to enable them to test electronic mail and data processing capabilities.

Report Accession Nos. 780

User Form Nos. None

Similar Experiment Nos. CTS-15, CTS-18

Primary Keywords: Data Transmission, Communications

Secondary Keywords: Computer Communication, Facsimile, Conferences, Teleconferencing, CTS

ATS/CTS EXPERIMENT DATA

Experiment No. CTS-27

Experiment Title Women's Satellite Service

Begin Date Pending Completion

Experimenter National Women's Agenda, J. Zimmerman

Geographic Location United States

Satellite ID CTS Frequency Mode

Category of Experiment Data Transmission, Communication

Experiment Description

The Women's Satellite Services Project is designed to determine the feasibility of linking a non-broadcast satellite with ground systems to create a vital information network among over 100 women's organizations which represent over 30,000,000 women.

This experimental model will link the offices of affiliated women's groups in six cities (New York, Washington, Chicago, Los Angeles, Houston, San Francisco) for both inter-organizational and intra-office communications through audio, teletype, facsimile, and computer data services on a scheduled basis. All systems would be two-way. Through this project design we will specifically explore the feasibility of large scale audio teleconferencing, a women's news wire service, and hard-copy information distribution.

Report Accession Nos. 780

User Form Nos. None

Similar Experiment Nos.

Primary Keywords: Data Transmision, Communications

Secondary Keywords: Teleconferencing, Data Links, Conferences, Facsimile, CTS

ATS/CTS EXPERIMENT DATA

Experiment No. CTS-28

Experiment Title Long Baseline Interferometer

Begin Date May 1978 Completion Open

Experimenter University of Illinois, G. Swenson

Geographic Location Western Hemisphere

Satellite ID CTS Frequency _____ Mode _____

Category of Experiment Broadcasting, Technology

Experiment Description

This experiment will measure the absolute phase difference between two atomic oscillators situated at observatories thousands of kilometers apart. This has direct application to both Astrometry (the precise measurement of positions of cosmic radio sources) and to Geodesy (the precise measurement of baseline lengths and orientations on the earth.)

As the CTS satellite was not designed for this application, the on-board oscillator is not stable. There are further perturbations of the apparent on-board oscillator frequency caused by Doppler shifts from the motions of the satellite. Hence, it is necessary to employ a complex system of two-way transmissions and modulations to cancel unwanted phase drifts.

The experiment has been conducted several times and the data is being analyzed for the causes of various phase perturbations, thought to arise mainly from the earth's atmosphere.

Report Accession Nos. 792

User Form Nos. None

Similar Experiment Nos. _____

Primary Keywords: Broadcasting, Technology

Secondary Keywords: Interferometry, CTS

ATS/CTS EXPERIMENT DATA

Experiment No. CTS-29

Experiment Title University Graduate Level Studies

Begin Date May 1978 Completion May 1979

Experimenter Varian Association, Inc., R. Shulken

Geographic Location Massachusetts, California

Satellite ID CTS Frequency _____ Mode _____

Category of Experiment Education, College

Experiment Description

Varian Associates is using CTS to broadcast graduate level courses from Beverly, Mass. to Palo Alto, CA. The courses are then relayed via microwave to Stanford University in California. The purpose of the experiment is:

1. To determine the feasibility of teaching graduate level courses via real time interactive teleconferencing.
2. To compare the use of real time interactive teleconferencing with delayed videotape lectures.
3. To determine minimum acceptable program quality and classroom furnishings.
4. To derive economic models of operational graduate level interactive university/industry networks.

Report Accession Nos. None

User Form Nos. None

Similar Experiment Nos. CTS-12, CTS-16

Primary Keywords: Education

Secondary Keywords: Teleconferencing, Video Transmission, Stanford University, CTS

ATS/CTS EXPERIMENT DATA

Experiment No. CTS-30

Experiment Title Terminal of Tomorrow

Begin Date Mar 1978 Completion July 1979

Experimenter FCC, I. Galane

Geographic Location Ohio

Satellite ID CTS Frequency _____ Mode _____

Category of Experiment Broadcasting, Program

Experiment Description

The FCC plans to demonstrate color television transmission on small, relatively simple terminals (Terminals of Tomorrow) at NASA/Lewis Research Center.

The Federal Communications Commission actively participated in the joint United States - Canadian Communications Technology Satellite (CTS/Canadaian "Hermes") experimentation to: (1) evaluate the potential use of small, relatively simple, inexpensive earth receiving terminals for satellite broadcasting, and (2) provide technical guidance to FCC Commissioners and U.S. participants in international conferences.

Originally a subordinate experimenter under the National Aeronautics and Space Administration Goddard Space Flight Center Advanced Ground Receiving Equipment Experiment (AGREE) with the loan of receiving terminals from Japan Broadcasting Corporation (NHK), the FCC received NASA approval in March 1978 to conduct an independent experiment entitled "Terminals of Tomorrow" (TOT) with terminals from other sources.

The FCC to date has: (1) tested five different small receive-only terminals under a great variety of environmental conditions, thereby acquiring a wealth of operational experience as well as certain concrete experimental results; (2) accomplished the first (insofar as can be determined) actual satellite-to-home television reception; (3) conducted many demonstrations of high power satellite television reception with small earth terminals, notably for FCC Chairman Charles D. Ferris and for members of Congressional and FCC Commissioners' staffs, as also for NHK and other Japanese visitors in advance of the March 1978 launch of the Japanese Broadcast Satellite Experiment (BSE).

Report Accession Nos. 847

User Form Nos. None

Similar Experiment Nos. CTS-20

Primary Keywords: Broadcasting

Secondary Keywords: Television, Color Television, Terminals

ATS/CTS EXPERIMENT DATA

Experiment No. CTS-31

Experiment Title Three Way Time Transfer

Begin Date Jan 1979 Completion July 1979

Experimenter U.S. Naval Observatory

Geographic Location U.S. - Canada

Satellite ID CTS Frequency _____ Mode _____

Category of Experiment Time and Frequency

Experiment Description and Principal Investigator

The only information available is from a CTS user meeting report. A three way time transfer took place between ground stations in Washington D.C., Denver, Colorado and Ottawa, Canada.

Report Accession Nos. 877

User Form Nos. None

Similar Experiment Nos. CTS-28

Primary Keywords: Time Transfer, CTS

Secondary Keywords: Naval Observatory, Frequency

ATS/CTS EXPERIMENT DATA

Experiment No. CTS-33

Experiment Title Wide-Band Techniques for Satellite Communication

Begin Date January 1979 Completion July 1979

Experimenter GTE Laboratories

Geographic Location U.S.

Satellite ID CTS Frequency _____ Mode _____

Category of Experiment _____

Experiment Description and Principal Investigator

The experiment was comprised of two parts. The first objective was to evaluate GTE designed earth terminal equipment. The second objective was to perform teleconferencing. Only outline in minutes of 22nd Users meeting were available.

Report Accession Nos. 877

User Form Nos. None

Similar Experiment Nos. CTS-6, CTS-15, CTS-18, CTS-30

Primary Keywords: Earth Terminals, Teleconferencing

Secondary Keywords: GTE, Wide-Band

ATS/CTS EXPERIMENT DATA

Experiment No. CTS-35

Experiment Title CT Scanning Network

Begin Date January 1979 **Completion** July 1979

Experimenter University of Colorado Medical Center

Geographic Location Western U.S.

Satellite ID CTS **Frequency** _____ **Mode** _____

Category of Experiment Health Services

Experiment Description and Principal Investigator

An experiment in time-sharing for computerized axial tomography. The project objectives were to develop an initial model of a CT network employing satellites, to evaluate linking technology for such a network, and to develop information on cost effectiveness.

Report Accession Nos. 877

User Form Nos. None

Similar Experiment Nos. _____

Primary Keywords: CTS, CT Scanning Network

Secondary Keywords: Time-Sharing, Axial Tomography

SECTION 3
CROSS INDEX FOR ATS/CTS EXPERIMENTS

Nomenclature data for each experiment were entered onto I.B.M. cards. The data entered were Experiment Number, Experiment Title, Category of Experiment, Experimenter, Satellite, Geographic Locations, Chronology, *Number of Hours.

The cards were then sorted on each of the data fields given above and listed. This section contains these listings of the experiments, each listing utilizing a different sort. The reader can use these listings in a variety of ways. The listings provide a current summary of the uses made of the satellites and therefore gives to the reader a feel for both the variety of uses and the total time each satellite was used. In addition the reader can use these listings to pinpoint activity in a given area of usage. That is, the reader can use these listings to identify all experiments having the same entry in a particular data field. For example, the reader can use the sort under "CAT" to identify all experiments done in a certain category, e.g. education.

*The number of hours was given to us by GSFC from their computer listings and was not part of the original experiment forms.

3.1 Sorted by Experiment Number

ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS *
CTS-T	TEP/SHF	GRD TERM	NASA/LERC	CTS	OHIO	2/76- OPEN	839
CTS-01	COMM LINK CHAR	WAVE PROP	NASA/GSFC	CTS	U.S.	2/76-12/77	315
CTS-01	COMM LINK CHAR	WAVE PROP	OHIO STATE U	CTS	OHIO	2/76-12/77	315
CTS-01	COMM LINK CHAR	WAVE PROP	VIRGINIA POLY	CTS	VIRGINIA	2/76-12/77	315
CTS-01	COMM LINK CHAR	WAVE PROP	U. OF TEXAS	CTS	TEXAS	2/76-12/77	315
CTS-04	COLLEGE CURR	EDUCATION	STANFORD UNIV	CTS	U.S./CANADA	2/76- OPEN	446
CTS-04	COLLEGE CURR	EDUCATION	CARLETON UNIV	CTS	U.S./CANADA	2/76- OPEN	446
CTS-06	TET/COMSAT	GRD TERM	COMSAT LABS	CTS	U.S.(EAST)	2/76- OPEN	266
CTS-07	BIOMED COMMUN	MEDICAL	LISTER HILL	CTS	U.S.	6/77- OPEN	404
CTS-07	BIOMED COMMUN	EDUCATION	LISTER HILL	CTS	U.S.	6/77- OPEN	404
CTS-09	SALINET	EDUCATION	SALINET	CTS	U.S.	10/77- 4/78	10
CTS-11	HEALTH/COMMUN	MEDICAL	VETERANS ADM	CTS	U.S.(WEST)	6/77- OPEN	306
CTS-11	HEALTH/COMMUN	EDUCATION	VETERANS ADM	CTS	U.S.(WEST)	6/77- OPEN	306
CTS-12	AESP II	EDUCATION	APP. REG. COMM.	CTS	APPALACHIA	PENDING	0
CTS-13	DECENT MED ED	MEDICAL	WAMI	CTS	ALASKA/WASH	3/77- OPEN	292
CTS-13	DECENT MED ED	EDUCATION	WAMI	CTS	ALASKA/WASH	3/77- OPEN	292
CTS-13	DECENT MED ED	EDUCATION	U OF WASHINGTON	CTS	ALASKA/WASH	3/77- OPEN	292
CTS-15	TELECONFERENCE	CONFERENCE	WESTINGHOUSE	CTS	U.S.(EAST)	2/76- OPEN	286
CTS-16	PROJ INTERCHG	EDUCATION	ARCH OF S.F.	CTS	CALIFORNIA	3/76- 6/78	45
CTS-17	HEALTH ED TV	MEDICAL	ASSOC OF W HOSP	CTS	ROCKY MTNS	PENDING	0
CTS-17	HEALTH ED TV	EDUCATION	ASSOC OF W HOSP	CTS	ROCKY MTNS	PENDING	0
CTS-18	INTRANASA COMM	CONFERENCE	NASA/GSFC	CTS	U.S.	5/76- OPEN	382
CTS-18	INTRANASA COMM	CONFERENCE	NASA/LERC	CTS	U.S.	5/76- OPEN	382
CTS-18	INTRANASA COMM	CONFERENCE	NASA/ARC	CTS	U.S.	5/76- OPEN	382
CTS-19	SAT. DIST.	DATA TRANS	SECA	CTS	U.S.(SOUTH)	12/76- OPEN	655
CTS-20	ADV GRD REC EQ	GRD TERM	NASA/GSFC	CTS	U.S.	4/76- 4/78	87
CTS-21	PSSC	DEMO	PSSC	CTS	U.S.	2/77- OPEN	284
CTS-21	PSSC	SUPPORT	PSSC	CTS	U.S.	2/77- OPEN	284
CTS-22	ICE FLOW	DATA TRANS	NASA/LERC	CTS	ALASKA	8/76- 9/76	70
CTS-24	DICE	DATA TRANS	NASA/LERC	CTS	U.S.(EAST)	6/77- OPEN	131
CTS-24	DICE	DATA TRANS	COMSAT LABS	CTS	U.S.(EAST)	5/76- OPEN	131
CTS-25	CONGRESS	CONFERENCE	GEO WASH UNIV	CTS	MARYLAND	4/77- 8/78	39
CTS-26	PROJ ADJUNCT	CONFERENCE	SAT BUS SYSTEMS	CTS	VIRGINIA	9/77- 2/78	178
CTS-26	PROJ ADJUNCT	DATA TRANS	SAT BUS SYSTEMS	CTS	VIRGINIA	9/77- 2/78	178
CTS-27	WOMENS SAT SER	CONFERENCE	NAT WOMENS AG	CTS	U.S.	PENDING	0
CTS-28	VLBI	TIME/FREQ	UNIV OF ILL	CTS	U.S./CANADA	5/78-12/78	120
CTS-29	UNIV GRAD STUDY	EDUCATION	VARIAN ASSOC	CTS	U.S.	5/78-12/78	49
CTS-30	TER OF TOMORROW	GRD TERM	FCC	CTS	U.S.	3/78-12/78	56
CTS-31	3 WAY TIME TRAN	TIME/FREQ	U.S. NAVAL OBS.	CTS	U.S./CANADA	1/79- 7/79	0
CTS-33	WIDE BAND COMM.	CONFERENCE	GTE LABS	CTS	U.S.	1/79- OPEN	6
CTS-35	CT SCANNING NET	MEDICAL	U. OF COLORADO	CTS	U.S.(WEST)	4/79- 7/79	0
102	DATA XMISSION	MEDICAL	DUKE U. MED CEN	1	U.S.(EAST)	11/71-11/71	54
107	SPEC SHF	SUPPORT	GE	1	W. HEMIS.	68- 70	1929
107	SPEC SHF	SUPPORT	GE	3	W. HEMIS.	68- 70	1613
108	LAUNCH SUPPORT	SUPPORT	NASA	1	U.S.	1/67- 1/76	930
108	LAUNCH SUPPORT	SUPPORT	NASA	3	U.S.	1/67- 5/76	369
108	LAUNCH SUPPORT	SUPPORT	NASA	5	U.S.	3/67-10/72	69
108	LAUNCH SUPPORT	SUPPORT	NASA	6	U.S.	7/77- 2/78	7
183	WEFAX	METEOR.	NOAA	1	WORLD	3/69- OPEN	5957
183	WEFAX	DATA TRANS	NOAA	1	WORLD	3/69- OPEN	5957
183	WEFAX	METEOR.	NOAA	3	WORLD	3/69- OPEN	3943
183	WEFAX	DATA TRANS	NOAA	3	WORLD	3/69- OPEN	3943
185	VHF A/C	A/C COMM	ARINC	1	U.S.	1/67- 6/70	264
185	VHF A/C	A/C COMM	ARINC	3	U.S.	1/67- 6/70	308
202	S/C SUPPORT	SUPPORT	NASA	1	W. HEMIS.	4/69- 70	270

* ATS SCHEDULED TIME/CTS ACTUAL TIME

3.1 Sorted by Experiment Number (Cont.)

ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS *
205	SSCC	METEOR.	NOAA	1	WORLD	3/69- OPEN	8372
205	SSCC	DATA TRANS	NOAA	1	WORLD	3/69- OPEN	8372
205	SSCC	METEOR.	NOAA	3	WORLD	3/69- OPEN	20
205	SSCC	DATA TRANS	NOAA	3	WORLD	3/69- OPEN	20
210	MSSCC	DATA TRANS	NOAA	1	WORLD	3/69- 6/72	7
210	MSSCC	METEOR.	NOAA	1	WORLD	3/69- 6/72	7
210	MSSCC	DATA TRANS	NOAA	3	WORLD	3/69- OPEN	26966
210	MSSCC	METEOR.	NOAA	3	WORLD	3/69- OPEN	26966
211	IDCS	METEOR.	NOAA	3	U.S.	11/67-10/72	1050
211	IDCS	SAT PHOTOS	NOAA	3	U.S.	11/67-10/72	1050
225	VHF ENGLAND	MARITIME	UNITED KINDGOM	3	ATLANTIC	8/70-12/70	191
226	VHF NETHERLAND	MARITIME	NETHERLANDS	3	ATLANTIC	8/70-12/71	265
227	HET ALASKA	EDUCATION	ST. OF ALASKA	1	ALASKA	6/69- OPEN	11314
227	HET ALASKA	MEDICAL	ST. OF ALASKA	1	ALASKA	6/69- OPEN	11314
227	HET ALASKA	EDUCATION	NAT EDUC ASSOC	1	W. HEMIS.	6/69- OPEN	11314
228	VHF GE	DATA TRANS	GE	1	BERMUDA	2/69- 8/71	41
228	VHF GE	MARITIME	GE	1	BERMUDA	2/69- 8/71	41
228	VHF GE	RANGING	GE	1	BERMUDA	2/69- 8/71	41
228	VHF GE	DATA TRANS	GE	3	BERMUDA	2/69- 8/71	142
228	VHF GE	MARITIME	GE	3	BERMUDA	2/69- 8/71	142
228	VHF GE	RANGING	GE	3	BERMUDA	2/69- 8/71	142
230	VHF B/ION	SUPPORT	MAX PLANCK INST	3	W. HEMIS.	3/71- 9/71	176
230	VHF B/ION	SUPPORT	NASA/WALLOPS	3	W. HEMIS.	3/71- 9/71	176
231	VHF MSFN PROP	WAVE PROP	MSFN NETWORK	3	W. HEMIS.	9/70- 2/71	22
232	VHF EGEG	A/C COMM	EGEG	1	W. HEMIS.	6/68-10/72	48
232	VHF EGEG	SUPPORT	EGEG	1	W. HEMIS.	6/68-10/72	48
233	VHF NORWAY	METEOR.	NORWAY	3	N. ATLANTIC	11/70- 2/71	22
233	VHF NORWAY	RANGING	NORWAY	3	N. ATLANTIC	11/70- 2/71	22
234	GE/FAA	RANGING	GE	1	N. ATLANTIC	11/69- 6/71	4
234	GE/FAA	RANGING	GE	3	N. ATLANTIC	11/69- 6/71	44
235	VHF HAWAII	EDUCATION	PEACESAT	1	PACIFIC	2/72- OPEN	6942
235	VHF HAWAII	MEDICAL	PEACESAT	1	PACIFIC	2/72- OPEN	6942
236	VHF BRAZIL	EDUCATION	STANFORD UNIV	3	W. HEMIS.	2/70- OPEN	38
238	VHF NBS	TIME/FREQ	NAT BUR OF STDS	3	W. HEMIS.	8/71- 8/72	327
239	VHF VANGUARD	DATA TRANS	USCG	1	ATLANTIC	6/68- 7/69	12
239	VHF VANGUARD	CONFERENCE	USCG	1	ATLANTIC	6/68- 7/69	12
239	VHF VANGUARD	DATA TRANS	USCG	3	ATLANTIC	6/68-10/74	28
239	VHF VANGUARD	CONFERENCE	USCG	3	ATLANTIC	6/68-10/74	28
244	MMW REG 1	WAVE PROP	NASA/GSFC	5	N. AMERICA	8/69- 9/71	1866
245	MMW REG 2	WAVE PROP	NASA/GSFC	5	N. AMERICA	8/69- 9/71	326
246	SSRA	RANGING	WESTINGHOUSE	5	U.S.(WEST)	4/71- 5/71	1
247	ALPHA-2	RANGING	USAF/SAMSO	5	ATLANTIC	7/70- 2/71	88
247	ALPHA-2	RANGING	AII	5	ATLANTIC	7/70- 2/71	88
248	SP L-BAND	DATA TRANS	AII	5	U.S.	8/74- 4/75	135
248	SP L-BAND	CONFERENCE	AII	5	U.S.	8/74- 4/75	135
249	MARAD	DATA TRANS	MARAD	5	W. HEMIS.	3/70-12/71	65
249	MARAD	MARITIME	MARAD	5	W. HEMIS.	3/70-12/71	65
249	MARAD	DATA TRANS	AII	5	W. HEMIS.	3/70-12/71	65
249	MARAD	MARITIME	AII	5	W. HEMIS.	3/70-12/71	65
249	MARAD	RANGING	AII	5	W. HEMIS.	3/70-12/71	65
250	L-BAND RANGING	RANGING	WESTINGHOUSE	1	U.S.(WEST)	2/71- 5/71	6
250	L-BAND RANGING	RANGING	WESTINGHOUSE	3	U.S.(WEST)	2/71- 5/71	0
250	L-BAND RANGING	RANGING	WESTINGHOUSE	5	U.S.(WEST)	2/71- 5/71	99
251	L-BAND DOT	DATA TRANS	BOEING	3	N. AMERICA	4/74-10/76	128
251	L-BAND DOT	RANGING	BOEING	5	N. AMERICA	2/71- 7/74	557

* ATS SCHEDULED TIME/CTS ACTUAL TIME

3.1 Sorted by Experiment Number (cont.)

ION	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS *
252	L-BAND FAA	RANGING	FAA	5	N. AMERICA	4/71- 4/72	275
252	L-BAND FAA	RANGING	BOEING	5	N. AMERICA	4/71- 4/72	275
253	SHF VLBI	TIME/FREQ	SMITHSONIAN INS	1	U.S.	5/71-10/72	2
253	SHF VLBI	TIME/FREQ	RADIO RES LABS	1	JAPAN	1/77- 2/77	5
253	SHF VLBI	TIME/FREQ	SMITHSONIAN INS	3	U.S.	5/71-10/72	190
253	SHF VLBI	TIME/FREQ	RADIO RES LABS	3	JAPAN	1/77- 2/77	190
253	SHF VLBI	TIME/FREQ	SMITHSONIAN INS	5	U.S.	5/71-10/72	0
257	SHF CRC	WAVE PROP	CANADA/CRC	1	CANADA	1/71-12/71	76
258	SHF SEARCH	LAW ENFORC	PUBLIC SYST INC	1	U.S.	12/71-12/71	68
259	COMSAT C/L PROP	WAVE PROP	COMSAT LABS	5	W. HEMIS.	1/72- 4/72	37
260	CRC C/L-BAND	WAVE PROP	CANADA	5	CANADA	9/71- 5/72	113
261	GE L-BAND	RANGING	GE	1	N. AMERICA	6/70-10/72	1
261	GE L-BAND	RANGING	GE	3	N. AMERICA	6/70-10/72	51
261	GE L-BAND	RANGING	GE	5	N. AMERICA	6/70- 6/73	152
263	TELESAT	WAVE PROP	TELESAT CANADA	1	CANADA	9/72- 9/72	136
264	MARAD/AII/PLACE	DATA TRANS	AII	3	WORLD	1/73- OPEN	131
264	MARAD/AII/PLACE	MARITIME	AII	3	WORLD	1/73- OPEN	131
264	MARAD/AII/PLACE	DATA TRANS	AII	5	WORLD	1/73- OPEN	912
264	MARAD/AII/PLACE	MARITIME	AII	5	WORLD	1/73- OPEN	912
264	MARAD/AII/PLACE	RANGING	AII	5	WORLD	1/73- OPEN	912
265	VANGUARD	DATA TRANS	USCG	3	ATLANTIC	3/72- 4/73	98
265	VANGUARD	DATA TRANS	USCG	3	PACIFIC	3/72- 4/73	98
265	VANGUARD	RANGING	USCG	5	ATLANTIC	3/72- 4/73	232
265	VANGUARD	RANGING	USCG	5	PACIFIC	3/72- 4/73	232
268	L-BAND TRILAT	RANGING	GE	1	U.S.	1/74- 1/76	19
268	L-BAND TRILAT	RANGING	GE	3	U.S.	1/74- 1/76	98
268	L-BAND TRILAT	RANGING	GE	5	U.S.	1/74- 1/76	172
281	LOS ALAMOS	A/C COMM	EG&G	1	W. HEMIS.	10/70-10/71	265
282	VHF NLM	MEDICAL	LISTER HILL	1	U.S.(N.W.)	10/71- OPEN	619
282	VHF NLM	COMPUTER	LISTER HILL	1	U.S.(N.W.)	10/71- OPEN	619
283	VHF UCLA	EDUCATION	UCLA	3	U.S.(WEST)	9/71-10/71	15
283	VHF UCLA	EDUCATION	TRW	3	U.S.(WEST)	9/71-10/71	15
284	VHF HIGH NOTE	RANGING	SANDIA/AEC	1	U.S.	3/71- 6/72	5
284	VHF HIGH NOTE	RANGING	SANDIA/AEC	3	U.S.	3/71- 6/72	5
285	VHF STANFORD	EDUCATION	STANFORD UNIV	1	U.S.(WEST)	5/71- 6/72	2
285	VHF STANFORD	EDUCATION	STANFORD UNIV	3	U.S.(WEST)	5/71- 6/72	139
286	MET(ARC)	EDUCATION	APP. REG. COMM.	3	APPALACHIA	6/74- OPEN	536
287	VHF SEEK	METEOR.	SIERRA RES CORP	3	U.S.	1/72-12/72	9
288	GE/MARAD	DATA TRANS	GE	1	ATLANTIC	4/72- 5/72	7
288	GE/MARAD	MARITIME	GE	1	ATLANTIC	4/72- 5/72	7
288	GE/MARAD	RANGING	GE	1	ATLANTIC	4/72- 5/72	7
288	GE/MARAD	DATA TRANS	GE	3	ATLANTIC	4/72- 5/72	46
288	GE/MARAD	MARITIME	GE	3	ATLANTIC	4/72- 5/72	46
288	GE/MARAD	RANGING	GE	3	ATLANTIC	4/72- 5/72	46
289	VHF CALYPSO	DATA TRANS	COUSTEAU GROUP	3	ANTARCTICA	6/72- 1/76	358
289	VHF CALYPSO	SUPPORT	COUSTEAU GROUP	3	ANTARCTICA	6/72- 1/76	358
290	VHF BERING SEA	SUPPORT	US/USSR	1	BERING SEA	12/72- 3/73	43
291	VHF ZURITA	SUPPORT	AEC	1	ALASKA/HAW.	6/73-12/73	62
292	VHF CLIPPER	SUPPORT	MOODY COLLEGE	1	ATLANTIC	7/73- 8/77	4
292	VHF CLIPPER	SUPPORT	MOODY COLLEGE	3	ATLANTIC	6/73- 8/77	342
292	VHF CLIPPER	SUPPORT	TEXAS A&M	3	ATLANTIC	6/73- 8/77	342
293	GE/EXXON	DATA TRANS	GE & EXXON	1	ATLANTIC	7/73- 2/74	90
293	GE/EXXON	MARITIME	GE & EXXON	1	ATLANTIC	7/73- 2/74	90
293	GE/EXXON	RANGING	GE & EXXON	1	ATLANTIC	7/73- 2/74	90
293	GE/EXXON	DATA TRANS	GE & EXXON	3	ATLANTIC	7/73- 2/74	186

* ATS SCHEDULED TIME/CTS ACTUAL TIME

3.1 Sorted by Experiment Number (cont.)

ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS *
293	GE/EXXON	MARITIME	GE & EXXON	3	ATLANTIC	7/73- 2/74	186
293	GE/EXXON	RANGING	GE & EXXON	3	ATLANTIC	7/73- 2/74	186
294	SP HET	SUPPORT	HET	1	U.S.	1/73- 8/77	1654
294	SP HET	SUPPORT	HET	3	U.S.	1/73- 8/77	1918
295	VHF NIAID	MEDICAL	NIAID	1	PACIFIC	10/73- OPEN	237
297	VHF USP/FIJI	EDUCATION	U. SO. PACIFIC	1	PACIFIC	1/74- OPEN	2667
300	VHF IHCHIS	MEDICAL	IHCHIS	1	ALASKA	5/74- 5/74	2
301	VHF GATE	SUPPORT	NOAA	3	UNKNOWN	1/74- 9/74	388
302	NEA	EDUCATION	NAT EDUC ASSOC	1	APPAL/ALASK	1/76- 4/77	39
302	NEA	EDUCATION	NAT EDUC ASSOC	3	APPAL/ALASK	1/76- 4/77	76
304	VHF OPN	TIME/FREQ	RADIO RES LABS	1	JAPAN	67- OPEN	158
305	VHF ALOHA	COMPUTER	U. OF HAWAII	1	PACIFIC	72- OPEN	1167
306	VHF DRAKE	SUPPORT	TEXAS A&M	3	ANTARCTICA	1/75- OPEN	428
307	VHF OCEAN	SUPPORT	U. OF MIAMI	3	ATLANTIC	12/77- OPEN	2241
309	NSF	SUPPORT	TEXAS A&M	3	ATLANTIC	3/76- 9/76	161
310	VHF DEA	CONFERENCE	DRUG ENF AGY	3	U.S.	4/76- OPEN	131
310	VHF DEA	RANGING	GE	3	U.S.	4/76- OPEN	131
310	VHF DEA	CONFERENCE	GE	3	U.S.	4/76- OPEN	131
310	VHF DEA	RANGING	DRUG ENF AGY	3	U.S.	4/76- OPEN	131
311	GSFC	DEMO	NASA/GSFC	3	U.S.(EAST)	7/76- OPEN	1705
312	ALC	CONFERENCE	AMER LUTHERAN C	1	U.S.	6/76- OPEN	219
315	ERDA	DATA TRANS	ERDA	1	PACIFIC	1/78- 1/79	146
315	ERDA	SUPPORT	ERDA	1	PACIFIC	1/78- 1/79	146
315	ERDA	DATA TRANS	ERDA	3	PACIFIC	7/76- 6/76	5
315	ERDA	SUPPORT	ERDA	3	PACIFIC	7/76- 8/76	5
316	NSTL	MEDICAL	SO REG MED CONS	3	U.S.(SOUTH)	10/76-10/76	71
316	NSTL	MEDICAL	NAT SP TECH LAB	3	U.S.(SOUTH)	10/76-10/76	71
317	LAMONT	SUPPORT	LAMONT/DOHERTY	3	SO. OCEAN	10/76- 3/77	161
318	DRI	DATA TRANS	DESERT RES INST	1	ANTARCTICA	12/76- 1/77	10
318	DRI	METEOR.	DESERT RES INST	1	ANTARCTICA	12/76- 1/77	10
318	DRI	DATA TRANS	DESERT RES INST	3	ANTARCTICA	12/76- 1/77	627
318	DRI	METEOR.	DESERT RES INST	3	ANTARCTICA	12/76- 1/77	627
319	SIRIUS	RANGING	BAKER DEV CORP	3	BERMUDA	12/76- 1/77	40
319	SIRIUS	SUPPORT	BAKER DEV CORP	3	BERMUDA	12/76- 1/77	40
320	SAMOA	EDUCATION	U. SO. PACIFIC	1	SAMOA	1/77- OPEN	258
321	FLTAC	CONFERENCE	DEPT OF NAVY	3	W. HEMIS.	1/77- OPEN	391
322	WHOI	SUPPORT	WOODS HOLE INST	3	PACIFIC	1/77- 2/77	244
324	SIPLE	SUPPORT	STANFORD UNIV	3	W. HEMIS.	2/77- OPEN	1166
325	GYRE	SUPPORT	TEXAS A&M	3	W. HEMIS.	4/77-10/78	315
329	NORPAX	SUPPORT	U. OF CAL/NAVY	1	N. PACIFIC	5/77- 6/77	53
330	MONTANA	SUPPORT	ST. OF MONTANA	3	MONTANA	6/77-11/77	163
331	PLU	BROADCAST	PROJECT LOOK-UP	3	PUERTO RICO	1/76- OPEN	87
331	PLU	EDUCATION	PROJECT LOOK-UP	3	PUERTO RICO	1/76- OPEN	87
332	ENDEAVOR	SUPPORT	U. OF RHODE ISL	3	ATLANTIC	7/77- 1/78	168
333	U. OF W. INDIES	EDUCATION	DEPT OF ST/AID	3	JAMAICA	1/78- 6/78	223
335	VHF SAR SIM	RANGING	BAKER DEV CORP	3	BERMUDA	6/77- 9/77	15
336	ERDA/DOD	SUPPORT	ERDA	1	ENEWETAK	10/77- 9/78	49
338	DISP	CONFERENCE	DEPT OF INTER	1	PACIFIC	12/77- OPEN	1453
340	SAMOA TV SAMFE	BROADCAST	PSSC	1	SAMOA	9/77- OPEN	53
340	SAMOA TV SAMFE	BROADCAST	PSSC	3	SAMOA	9/77- OPEN	96
342	PERU	SUPPORT	ADVENTURES UNL.	3	PERU	6/78- 7/78	46
343	ORANGE	SUPPORT	NAT. SC. FOUND.	3	ANTARCTICA	7/78- 8/78	176
344	BARBADOS	MEDICAL	DEPT OF ST/AID	3	BARBADOS	8/78- 9/78	14
601	RADIO FREQ INT.	WAVE PROP	NASA/GSFC	6	U.S.	6/74-12/76	877
602	VHRR RADIOMETER	METEOR.	NASA/GSFC	6	U.S.	6/74- 9/74	360

* ATS SCHEDULED TIME/CTS ACTUAL TIME

3.1 Sorted by Experiment Number(cont.)

ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS *
603	RAD ASTRO INTER	WAVE PROP	NASA/GSFC	6	WORLD	6/74- 6/75	9
604	SAPPSAC	SAT CONTRL	NASA/GSFC	6	U.S.	6/74- 1/75	72
605	PLACE	DATA TRANS	NASA	6	U.S.	9/74- 6/75	967
605	PLACE	RANGING	NASA	6	U.S.	9/74- 6/75	967
606	RADIO BEACON	WAVE PROP	NOAA	6	U.S.	6/74- 7/79	0
606	RADIO BEACON	WAVE PROP	NOAA	6	EUROPE	6/74- 7/79	0
607	IMDRAS	SAT CONTRL	NASA/GSFC	6	U.S.	6/74- 7/75	5
608	PROPAGATION(E)	WAVE PROP	ESTEC	6	EUROPE	8/75-10/76	2263
609	MMW	WAVE PROP	NASA/GSFC	6	U.S.	6/74- 7/79	3271
609	MMW	WAVE PROP	U. OF TEXAS	6	TEXAS	6/74- 7/79	3271
609	MMW	WAVE PROP	OHIO STATE U.	6	OHIO	6/74- 7/79	3271
609	MMW	WAVE PROP	COMSAT LABS	6	VIRGINIA	6/74- 7/79	3271
609	MMW	WAVE PROP	WESTINGHOUSE	6	MARYLAND	6/74- 7/79	3271
609	MMW	WAVE PROP	NAVAL RES LAB	6	MARYLAND	6/74- 7/79	3271
609	MMW	WAVE PROP	VIRGINIA POLY	6	VIRGINIA	6/74- 7/79	3271
609	MMW	WAVE PROP	BATTELLE LAB	6	WASHINGTON	6/74- 7/79	3271
609	MMW	WAVE PROP	BELL LAB	6	NEW JERSEY	6/74- 7/79	3271
609	MMW	WAVE PROP	ARMY	6	NEW JERSEY	6/74- 7/79	3271
610	INTERFEROMETER	SAT CONTRL	NASA/GSFC	6	U.S.	6/74-11/78	104
612	HET(ARC)	EDUCATION	ST. OF ALASKA	6	ALASKA	6/74- 6/75	1741
612	HET(ARC)	MEDICAL	INDIAN HLTH SER	6	ALASKA	6/74- 6/75	1741
612	HET(ARC)	EDUCATION	ROCKY MTN STS	6	ROCKY MTNS	6/74- 6/75	1741
612	HET(ARC)	EDUCATION	APP. REG. COMM.	6	APPALACHIA	6/74- 6/75	1741
612	HET(ARC)	MEDICAL	VETERANS ADM	6	APPALACHIA	6/74- 6/75	1741
612	HET(ARC)	EDUCATION	VETERANS ADM	6	APPALACHIA	6/74- 6/75	1741
612	HET(ARC)	MEDICAL	WAMI	6	ALASKA/WASH	6/74- 6/75	1741
612	HET(ARC)	EDUCATION	WAMI	6	ALASKA/WASH	6/74- 6/75	1741
617	TDRE	DATA TRANS	NASA/GSFC	6	WORLD	9/74- 7/79	622
617	TDRE	SAT CONTRL	NASA/GSFC	6	WORLD	9/74- 7/79	622
618	TRUST	DATA TRANS	NASA/GSFC	6	U.S.	9/74- 7/75	40
620	GEOS-C	SAT CONTRL	NASA/GSFC	6	WORLD	9/74- 7/79	894
620	GEOS-C	DATA TRANS	NASA/GSFC	6	WORLD	9/74- 7/79	894
623	L-BAND EXP	WAVE PROP	U. OF PA	6	U.S.(EAST)	8/76- 1/77	787
631	ENV MEAS EXP	SCIENTIFIC	NASA/GSFC	6	U.S.	6/74- 7/77	50
638	COMSAT PROP IND	WAVE PROP	COMSAT LABS	6	EUROPE	3/76- 7/76	667
639	ALL DEMO	DEMO	NASA	6	U.S.	6/74- 7/79	322
640	APOLLO-SOYUZ	SUPPORT	NASA/HOUSTON	6	WORLD	10/74- 7/75	333
647	SITE	BROADCAST	INDIA	6	INDIA	8/75- 8/76	2171
647	SITE	EDUCATION	INDIA	6	INDIA	8/75- 8/76	2171
649	MAG FIELD STUDY	SCIENTIFIC	NASA/GSFC	6	U.S.	4/75- 6/75	295
650	MAG DATA	SCIENTIFIC	UCLA	6	U.S.	5/75- 8/76	903
657	CRC	RANGING	CANADA/CRC	6	CANADA	9/74- 8/77	138
658	COMSAT PROP US	WAVE PROP	COMSAT LABS	6	U.S.(EAST)	6/74- 6/78	159
660	PLU	BROADCAST	PROJECT LOOK-UP	6	SO.AMERICA	1/76- 7/79	141
660	PLU	EDUCATION	PROJECT LOOK-UP	6	SO.AMERICA	1/76- 7/79	141
661	ALFE	BROADCAST	PSSC	6	ALASKA	9/77-10/78	1979
661	ALFE	DATA TRANS	PSSC	6	ALASKA	9/77-10/78	1979
663	U. OF W. INDIES	BROADCAST	DEPT OF ST/AID	6	WEST INDIES	10/78- 7/79	66
663	U. OF W. INDIES	EDUCATION	DEPT OF ST/AID	6	WEST INDIES	10/78- 7/79	66
664	SAR L-BAND C/O	RANGING	FAA	6	N. ATLANTIC	8/74- 4/75	13
664	SAR L-BAND C/O	RANGING	BOEING	6	N. ATLANTIC	8/74- 4/75	13
666	UHF/NRL	SCIENTIFIC	NAVAL RES LAB	6	U.S.	9/77- 5/78	18
667	ALVA	MEDICAL	PSSC	6	ALASKA	9/77- 7/79	69
667	ALVA	MEDICAL	PSSC	6	U.S.(WEST)	9/77- 7/79	69
667	ALVA	EDUCATION	PSSC	6	ALASKA	9/77- 7/79	69

* ATS SCHEDULED TIME/CTS ACTUAL TIME

3.1 Sorted by Experiment Number (cont.)

ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS *
667	ALVA	EDUCATION	PSSC	6	U.S.(WEST)	9/77- 7/79	69
668	MOTOROLA	WAVE PROP	MOTOROLA	6	U.S.	7/77- 9/78	47
670	TEAM	EDUCATION	MONTANA ST U	6	MONTANA	9/77- 7/79	2
671	MSH	MEDICAL	MTN STS MTH COR	6	ROCKY MTNS	3/75- 5/75	22
672	SAMFE	BROADCAST	PSSC	6	SAMOA	9/77- 2/78	444
673	NIE	EDUCATION	APP. REG. COMM.	6	APPALACHIA	1/78- 7/79	3
674	GE L-BAND	RANGING	GE	6	U.S.(EAST)	12/77- 7/79	573
674	GE L-BAND	SUPPORT	GE	6	U.S.(EAST)	12/77- 7/79	573
677	IHS	MEDICAL	INDIAN HLTH SER	6	ALASKA	9/78- 7/79	0
677	IHS	COMPUTER	INDIAN HLTH SER	6	ALASKA	9/78- 7/79	0
677	IHS	CONFERENCE	INDIAN HLTH SER	6	ALASKA	9/78- 7/79	0

* ATS SCHEDULED TIME/CTS ACTUAL TIME

3.2 Sorted by Experiment Name

ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS *
CTS-20	ADV GRD REC EQ	GRD TERM	NASA/GSFC	CTS	U.S.	4/76- 4/78	87
CTS-12	AESP II	EDUCATION	APP. REG. COMM.	CTS	APPALACHIA	PENDING	0
312	ALC	CONFERENCE	AMER LUTHERAN C	1	U.S.	6/76- OPEN	219
661	ALFE	BROADCAST	PSSC	6	ALASKA	9/77-10/78	1979
661	ALFE	DATA TRANS	PSSC	6	ALASKA	9/77-10/78	1979
639	ALL DEMO	DEMO	NASA	6	U.S.	6/74- 7/79	322
247	ALPHA-2	RANGING	USAF/SAMSO	5	ATLANTIC	7/70- 2/71	88
247	ALPHA-2	RANGING	AII	5	ATLANTIC	7/70- 2/71	88
667	ALVA	MEDICAL	PSSC	6	ALASKA	9/77- 7/79	69
667	ALVA	MEDICAL	PSSC	6	U.S.(WEST)	9/77- 7/79	69
667	ALVA	EDUCATION	PSSC	6	ALASKA	9/77- 7/79	69
667	ALVA	EDUCATION	PSSC	6	U.S.(WEST)	9/77- 7/79	69
640	APOLLO-SOYUZ	SUPPORT	NASA/HOUSTON	6	WORLD	10/74- 7/75	333
344	BARBADOS	MEDICAL	DEPT OF ST/AID	3	BARBADOS	8/78- 9/78	14
CTS-07	BIOMED COMMUN	MEDICAL	LISTER HILL	CTS	U.S.	6/77- OPEN	404
CTS-07	BIOMED COMMUN	EDUCATION	LISTER HILL	CTS	U.S.	6/77- OPEN	404
CTS-04	COLLEGE CURR	EDUCATION	STANFORD UNIV	CTS	U.S./CANADA	2/76- OPEN	446
CTS-04	COLLEGE CURR	EDUCATION	CARLETON UNIV	CTS	U.S./CANADA	2/76- OPEN	446
CTS-01	COMM LINK CHAR	WAVE PROP	NASA/GSFC	CTS	U.S.	2/76-12/77	315
CTS-01	COMM LINK CHAR	WAVE PROP	OHIO STATE U	CTS	OHIO	2/76-12/77	315
CTS-01	COMM LINK CHAR	WAVE PROP	VIRGINIA POLY	CTS	VIRGINIA	2/76-12/77	315
CTS-01	COMM LINK CHAR	WAVE PROP	U. OF TEXAS	CTS	TEXAS	2/76-12/77	315
259	COMSAT C/L PROP	WAVE PROP	COMSAT LABS	5	W. HEMIS.	1/72- 4/72	37
638	COMSAT PROP IND	WAVE PROP	COMSAT LABS	6	EUROPE	3/76- 7/76	667
658	COMSAT PROP US	WAVE PROP	COMSAT LABS	6	U.S.(EAST)	6/74- 6/78	159
CTS-25	CONGRESS	CONFERENCE	GEO WASH UNIV	CTS	MARYLAND	4/77- 8/78	39
260	CRC C/L-BAND	WAVE PROP	CANADA	5	CANADA	9/71- 5/72	113
657	CRC	RANGING	CANADA/CRC	6	CANADA	9/74- 8/77	138
CTS-35	CT SCANNING NET	MEDICAL	U. OF COLORADO	CTS	U.S.(WEST)	4/79- 7/79	0
102	DATA XMISSION	MEDICAL	DUKE U. MED CEN	1	U.S.(EAST)	11/71-11/71	54
CTS-13	DECENT MED ED	MEDICAL	WAMI	CTS	ALASKA/WASH	3/77- OPEN	292
CTS-13	DECENT MED ED	EDUCATION	WAMI	CTS	ALASKA/WASH	3/77- OPEN	292
CTS-13	DECENT MED ED	EDUCATION	U OF WASHINGTON	CTS	ALASKA/WASH	3/77- OPEN	292
CTS-24	DICE	DATA TRANS	NASA/LERC	CTS	U.S.(EAST)	6/77- OPEN	131
CTS-24	DICE	DATA TRANS	COMSAT LABS	CTS	U.S.(EAST)	5/76- OPEN	131
338	DISP	CONFERENCE	DEPT OF INTER	1	PACIFIC	12/77- OPEN	1453
318	DRI	DATA TRANS	DESERT RES INST	1	ANTARCTICA	12/76- 1/77	10
318	DRI	METEOR.	DESERT RES INST	1	ANTARCTICA	12/76- 1/77	10
318	DRI	DATA TRANS	DESERT RES INST	3	ANTARCTICA	12/76- 1/77	627
318	DRI	METEOR.	DESERT RES INST	3	ANTARCTICA	12/76- 1/77	627
332	ENDEAVOR	SUPPORT	U. OF RHODE ISL	3	ATLANTIC	7/77- 1/78	168
631	ENV MEAS EXP	SCIENTIFIC	NASA/GSFC	6	U.S.	6/74- 7/77	50
315	ERDA	DATA TRANS	ERDA	1	PACIFIC	1/78- 1/79	146
315	ERDA	SUPPORT	ERDA	1	PACIFIC	1/78- 1/79	146
315	ERDA	DATA TRANS	ERDA	3	PACIFIC	7/76- 8/76	5
315	ERDA	SUPPORT	ERDA	3	PACIFIC	7/76- 8/76	5
336	ERDA/DOD	SUPPORT	ERDA	1	ENEWETAK	10/77- 9/78	49
321	FLTAC	CONFERENCE	DEPT OF NAVY	3	W. HEMIS.	1/77- OPEN	391
620	GEOS-C	SAT CONTRL	NASA/GSFC	6	WORLD	9/74- 7/79	894
620	GEOS-C	DATA TRANS	NASA/GSFC	6	WORLD	9/74- 7/79	894
261	GE L-BAND	RANGING	GE	1	N. AMERICA	6/70-10/72	1
261	GE L-BAND	RANGING	GE	3	N. AMERICA	6/70-10/72	51
261	GE L-BAND	RANGING	GE	5	N. AMERICA	6/70- 6/73	152
674	GE L-BAND	RANGING	GE	6	U.S.(EAST)	12/77- 7/79	573
674	GE L-BAND	SUPPORT	GE	6	U.S.(EAST)	12/77- 7/79	573

* ATS SCHEDULED TIME/CTS ACTUAL TIME

3.2 Sorted by Experiment Name (cont.)

ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS *
293	GE/EXXON	DATA TRANS	GE & EXXON	1	ATLANTIC	7/73- 2/74	90
293	GE/EXXON	MARITIME	GE & EXXON	1	ATLANTIC	7/73- 2/74	90
293	GE/EXXON	RANGING	GE & EXXON	1	ATLANTIC	7/73- 2/74	90
293	GE/EXXON	DATA TRANS	GE & EXXON	3	ATLANTIC	7/73- 2/74	186
293	GE/EXXON	MARITIME	GE & EXXON	3	ATLANTIC	7/73- 2/74	186
293	GE/EXXON	RANGING	GE & EXXON	3	ATLANTIC	7/73- 2/74	186
234	GE/FAA	RANGING	GE	1	N. ATLANTIC	11/69- 6/71	4
234	GE/FAA	RANGING	GE	3	N. ATLANTIC	11/69- 6/71	44
288	GE/MARAD	DATA TRANS	GE	1	ATLANTIC	4/72- 5/72	7
288	GE/MARAD	MARITIME	GE	1	ATLANTIC	4/72- 5/72	7
288	GE/MARAD	RANGING	GE	1	ATLANTIC	4/72- 5/72	7
288	GE/MARAD	DATA TRANS	GE	3	ATLANTIC	4/72- 5/72	46
288	GE/MARAD	MARITIME	GE	3	ATLANTIC	4/72- 5/72	46
288	GE/MARAD	RANGING	GE	3	ATLANTIC	4/72- 5/72	46
311	GSFC	DEMO	NASA/GSFC	3	U.S.(EAST)	7/76- OPEN	1705
325	GYRE	SUPPORT	TEXAS A&M	3	W. HEMIS.	4/77-10/78	315
CTS-17	HEALTH ED TV	MEDICAL	ASSOC OF W HOSP	CTS	ROCKY MTNS	PENDING	0
CTS-17	HEALTH ED TV	EDUCATION	ASSOC OF W HOSP	CTS	ROCKY MTNS	PENDING	0
CTS-11	HEALTH/COMMUN	MEDICAL	VETERANS ADM	CTS	U.S.(WEST)	6/77- OPEN	306
CTS-11	HEALTH/COMMUN	EDUCATION	VETERANS ADM	CTS	U.S.(WEST)	6/77- OPEN	306
227	HET ALASKA	EDUCATION	ST. OF ALASKA	1	ALASKA	6/69- OPEN	11314
227	HET ALASKA	MEDICAL	ST. OF ALASKA	1	ALASKA	6/69- OPEN	11314
227	HET ALASKA	EDUCATION	NAT EDUC ASSOC	1	W. HEMIS.	6/69- OPEN	11314
286	HET(ARC)	EDUCATION	APP. REG. COMM.	3	APPALACHIA	6/74- OPEN	536
612	HET(ARC)	EDUCATION	ST. OF ALASKA	6	ALASKA	6/74- 6/75	1741
612	HET(ARC)	MEDICAL	INDIAN HLTH SER	6	ALASKA	6/74- 6/75	1741
612	HET(ARC)	EDUCATION	ROCKY MTN STS	6	ROCKY MTNS	6/74- 6/75	1741
612	HET(ARC)	EDUCATION	APP. REG. COMM.	6	APPALACHIA	6/74- 6/75	1741
612	HET(ARC)	MEDICAL	VETERANS ADM	6	APPALACHIA	6/74- 6/75	1741
612	HET(ARC)	EDUCATION	VETERANS ADM	6	APPALACHIA	6/74- 6/75	1741
612	HET(ARC)	MEDICAL	WAMI	6	ALASKA/WASH	6/74- 6/75	1741
612	HET(ARC)	EDUCATION	WAMI	6	ALASKA/WASH	6/74- 6/75	1741
CTS-22	ICE FLOW	DATA TRANS	NASA/LERC	CTS	ALASKA	8/76- 9/76	70
211	IDCS	METEOR.	NOAA	3	U.S.	11/67-10/72	1050
211	IDCS	SAT PHOTOS	NOAA	3	U.S.	11/67-10/72	1050
607	IHORAS	SAT CONTRL	NASA/GSFC	6	U.S.	6/74- 7/75	5
677	IHS	MEDICAL	INDIAN HLTH SER	6	ALASKA	9/78- 7/79	0
677	IHS	COMPUTER	INDIAN HLTH SER	6	ALASKA	9/78- 7/79	0
677	IHS	CONFERENCE	INDIAN HLTH SER	6	ALASKA	9/78- 7/79	0
610	INTERFEROMETER	SAT CONTRL	NASA/GSFC	6	U.S.	6/74-11/78	104
CTS-18	INTRANASA COMM	CONFERENCE	NASA/GSFC	CTS	U.S.	5/76- OPEN	382
CTS-18	INTRANASA COMM	CONFERENCE	NASA/LERC	CTS	U.S.	5/76- OPEN	382
CTS-18	INTRANASA COMM	CONFERENCE	NASA/ARC	CTS	U.S.	5/76- OPEN	382
317	LAMONT	SUPPORT	LAMONT/DOHERTY	3	SO. OCEAN	10/76- 3/77	161
108	LAUNCH SUPPORT	SUPPORT	NASA	1	U.S.	1/67- 1/76	930
108	LAUNCH SUPPORT	SUPPORT	NASA	3	U.S.	1/67- 8/76	369
108	LAUNCH SUPPORT	SUPPORT	NASA	5	U.S.	3/67-10/72	69
108	LAUNCH SUPPORT	SUPPORT	NASA	6	U.S.	7/77- 2/78	7
281	LOS ALAMOS	A/C COMM	EG&G	1	W. HEMIS.	10/70-10/71	265
251	L-BAND DOT	DATA TRANS	BOEING	3	N. AMERICA	4/74-10/76	128
251	L-BAND DOT	RANGING	BOEING	5	N. AMERICA	2/71- 7/74	557
623	L-BAND EXP	WAVE PROP	U. OF PA	6	U.S.(EAST)	8/76- 1/77	787
252	L-BAND FAA	RANGING	FAA	5	N. AMERICA	4/71- 4/72	275
252	L-BAND FAA	RANGING	BOEING	5	N. AMERICA	4/71- 4/72	275
250	L-BAND RANGING	RANGING	WESTINGHOUSE	1	U.S.(WEST)	2/71- 5/71	6

* ATS SCHEDULED TIME/CTS ACTUAL TIME

3.2 Sorted by Experiment Name (cont.)

ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS *
250	L-BAND RANGING	RANGING	WESTINGHOUSE	3	U.S.(WEST)	2/71- 5/71	0
250	L-BAND RANGING	RANGING	WESTINGHOUSE	5	U.S.(WEST)	2/71- 5/71	99
268	L-BAND TRILAT	RANGING	GE	1	U.S.	1/74- 1/76	19
268	L-BAND TRILAT	RANGING	GE	3	U.S.	1/74- 1/76	98
268	L-BAND TRILAT	RANGING	GE	5	U.S.	1/74- 1/76	172
650	MAG DATA	SCIENTIFIC	UCLA	6	U.S.	5/75- 8/76	903
649	MAG FIELD STUDY	SCIENTIFIC	NASA/GSFC	6	U.S.	4/75- 6/75	295
249	MARAD	DATA TRANS	MARAD	5	W. HEMIS.	3/70-12/71	65
249	MARAD	MARITIME	MARAD	5	W. HEMIS.	3/70-12/71	65
249	MARAD	DATA TRANS	AII	5	W. HEMIS.	3/70-12/71	65
249	MARAD	MARITIME	AII	5	W. HEMIS.	3/70-12/71	65
249	MARAD	RANGING	AII	5	W. HEMIS.	3/70-12/71	65
264	MARAD/AII/PLACE	DATA TRANS	AII	3	WORLD	1/73- OPEN	131
264	MARAD/AII/PLACE	MARITIME	AII	3	WORLD	1/73- OPEN	131
264	MARAD/AII/PLACE	DATA TRANS	AII	5	WORLD	1/73- OPEN	912
264	MARAD/AII/PLACE	MARITIME	AII	5	WORLD	1/73- OPEN	912
264	MARAD/AII/PLACE	RANGING	AII	5	WORLD	1/73- OPEN	912
244	MMW REG 1	WAVE PROP	NASA/GSFC	5	N. AMERICA	8/69- 9/71	1866
245	MMW REG 2	WAVE PROP	NASA/GSFC	5	N. AMERICA	8/69- 9/71	326
609	MMW	WAVE PROP	NASA/GSFC	6	U.S.	6/74- 7/79	3271
609	MMW	WAVE PROP	U. OF TEXAS	6	TEXAS	6/74- 7/79	3271
609	MMW	WAVE PROP	OHIO STATE U.	6	OHIO	6/74- 7/79	3271
609	MMW	WAVE PROP	COMSAT LABS	6	VIRGINIA	6/74- 7/79	3271
609	MMW	WAVE PROP	WESTINGHOUSE	6	MARYLAND	6/74- 7/79	3271
609	MMW	WAVE PROP	NAVAL RES LAB	6	MARYLAND	6/74- 7/79	3271
609	MMW	WAVE PROP	VIRGINIA POLY	6	VIRGINIA	6/74- 7/79	3271
609	MMW	WAVE PROP	BATTELLE LAB	6	WASHINGTON	6/74- 7/79	3271
609	MMW	WAVE PROP	BELL LAB	6	NEW JERSEY	6/74- 7/79	3271
609	MMW	WAVE PROP	ARMY	6	NEW JERSEY	6/74- 7/79	3271
330	MONTANA	SUPPORT	ST. OF MONTANA	3	MONTANA	6/77-11/77	163
668	MOTOROLA	WAVE PROP	MOTOROLA	6	U.S.	7/77- 9/78	47
671	MSH	MEDICAL	MTN STS HTH COR	6	ROCKY MTNS	3/75- 5/75	22
210	MSSCC	DATA TRANS	NOAA	1	WORLD	3/69- 6/72	7
210	MSSCC	METEOR.	NOAA	1	WORLD	3/69- 6/72	7
210	MSSCC	DATA TRANS	NOAA	3	WORLD	3/69- OPEN	26966
210	MSSCC	METEOR.	NOAA	3	WORLD	3/69- OPEN	26966
302	NEA	EDUCATION	NAT EDUC ASSOC	1	APPAL/ALASK	1/76- 4/77	39
302	NEA	EDUCATION	NAT EDUC ASSOC	3	APPAL/ALASK	1/76- 4/77	76
673	NIE	EDUCATION	APP. REG. COMM.	6	APPALACHIA	1/78- 7/79	3
329	NORPAX	SUPPORT	U. OF CAL/NAVY	1	N. PACIFIC	5/77- 6/77	53
309	NSF	SUPPORT	TEXAS A&M	3	ATLANTIC	3/76- 9/76	161
316	NSTL	MEDICAL	SO REG MED CONS	3	U.S.(SOUTH)	10/76-10/76	71
316	NSTL	MEDICAL	NAT SP TECH LAB	3	U.S.(SOUTH)	10/76-10/76	71
343	ORANGE	SUPPORT	NAT. SC. FOUND.	3	ANTARCTICA	7/78- 8/78	176
342	PERU	SUPPORT	ADVENTURES UNL.	3	PERU	6/78- 7/78	46
605	PLACE	DATA TRANS	NASA	6	U.S.	9/74- 6/75	967
605	PLACE	RANGING	NASA	6	U.S.	9/74- 6/75	967
331	PLU	BROADCAST	PROJECT LOOK-UP	3	PUERTO RICO	1/76- OPEN	87
331	PLU	EDUCATION	PROJECT LOOK-UP	3	PUERTO RICO	1/76- OPEN	87
660	PLU	BROADCAST	PROJECT LOOK-UP	6	SO.AMERICA	1/76- 7/79	141
660	PLU	EDUCATION	PROJECT LOOK-UP	6	SO.AMERICA	1/76- 7/79	141
CTS-26	PROJ ADJUNCT	CONFERENCE	SAT BUS SYSTEMS	CTS	VIRGINIA	9/77- 2/78	178
CTS-26	PROJ ADJUNCT	DATA TRANS	SAT BUS SYSTEMS	CTS	VIRGINIA	9/77- 2/78	178
CTS-16	PROJ INTERCHG	EDUCATION	ARCH OF S.F.	CTS	CALIFORNIA	3/76- 6/78	45
608	PROPAGATION(E)	WAVE PROP	ESTEC	6	EUROPE	8/75-10/76	2263

* ATS SCHEDULED TIME/CTS ACTUAL TIME

3.2 Sorted by Experiment Name (cont.)

ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS •
CTS-21	PSSC	DEMO	PSSC	CTS	U.S.	2/77- OPEN	294
CTS-21	PSSC	SUPPORT	PSSC	CTS	U.S.	2/77- OPEN	294
606	RADIO BEACON	WAVE PROP	NOAA	6	U.S.	6/74- 7/79	0
606	RADIO BEACON	WAVE PROP	NOAA	6	EUROPE	6/74- 7/79	0
601	RADIO FREQ INT.	WAVE PROP	NASA/GSFC	6	U.S.	6/74-12/76	877
603	RAD ASTRO INTER	WAVE PROP	NASA/GSFC	6	WORLD	6/74- 6/75	9
CTS-09	SALINET	EDUCATION	SALINET	CTS	U.S.	10/77- 4/78	10
672	SAMFE	BROADCAST	PSSC	6	SAMOA	9/77- 2/78	448
340	SAMOA TV SAMFE	BROADCAST	PSSC	1	SAMOA	9/77- OPEN	53
340	SAMOA TV SAMFE	BROADCAST	PSSC	3	SAMOA	9/77- OPEN	96
320	SAMOA	EDUCATION	U. SO. PACIFIC	1	SAMOA	1/77- OPEN	258
604	SAPPSAC	SAT CONTRL	NASA/GSFC	6	U.S.	6/74- 1/75	72
664	SAR L-BAND C/O	RANGING	FAA	6	N. ATLANTIC	8/74- 4/75	13
664	SAR L-BAND C/O	RANGING	BOEING	6	N. ATLANTIC	8/74- 4/75	13
CTS-19	SAT. DIST.	DATA TRANS	SECA	CTS	U.S.(SOUTH)	12/76- OPEN	655
257	SHF CRC	WAVE PROP	CANADA/CRC	1	CANADA	1/71-12/71	76
258	SHF SEARCH	LAW ENFORC	PUBLIC SYST INC	1	U.S.	12/71-12/71	68
253	SHF VLBI	TIME/FREQ	SMITHSONIAN INS	1	U.S.	5/71-10/72	2
253	SHF VLBI	TIME/FREQ	RADIO RES LABS	1	JAPAN	1/77- 2/77	5
253	SHF VLBI	TIME/FREQ	SMITHSONIAN INS	3	U.S.	5/71-10/72	190
253	SHF VLBI	TIME/FREQ	RADIO RES LABS	3	JAPAN	1/77- 2/77	190
253	SHF VLBI	TIME/FREQ	SMITHSONIAN INS	5	U.S.	5/71-10/72	0
324	SIPLE	SUPPORT	STANFORD UNIV	3	W. HEMIS.	2/77- OPEN	1166
319	SIRIUS	RANGING	BAKER DEV CORP	3	BERMUDA	12/76- 1/77	40
319	SIRIUS	SUPPORT	BAKER DEV CORP	3	BERMUDA	12/76- 1/77	40
647	SITE	BROADCAST	INDIA	6	INDIA	8/75- 8/76	2171
647	SITE	EDUCATION	INDIA	6	INDIA	8/75- 8/76	2171
107	SPEC SHF	SUPPORT	GE	1	W. HEMIS.	68- 70	1929
107	SPEC SHF	SUPPORT	GE	3	W. HEMIS.	68- 70	1613
294	SP HET	SUPPORT	HET	1	U.S.	1/73- 8/77	1654
294	SP HET	SUPPORT	HET	3	U.S.	1/73- 8/77	1918
248	SP L-BAND	DATA TRANS	AII	5	U.S.	8/74- 4/75	135
248	SP L-BAND	CONFERENCE	AII	5	U.S.	8/74- 4/75	135
205	SSCC	METEOR.	NOAA	1	WORLD	3/69- OPEN	8372
205	SSCC	DATA TRANS	NOAA	1	WORLD	3/69- OPEN	8372
205	SSCC	METEOR.	NOAA	3	WORLD	3/69- OPEN	20
205	SSCC	DATA TRANS	NOAA	3	WORLD	3/69- OPEN	20
246	SSRA	RANGING	WESTINGHOUSE	5	U.S.(WEST)	4/71- 5/71	1
202	STC SUPPORT	SUPPORT	NASA	1	W. HEMIS.	4/69- 70	270
617	TDRE	DATA TRANS	NASA/GSFC	6	WORLD	9/74- 7/79	622
617	TDRE	SAT CONTRL	NASA/GSFC	6	WORLD	9/74- 7/79	622
670	TEAM	EDUCATION	MONTANA ST U	6	MONTANA	9/77- 7/79	2
CTS-15	TELECONFERENCE	CONFERENCE	WESTINGHOUSE	CTS	U.S.(EAST)	2/76- OPEN	286
263	TELESAT	WAVE PROP	TELESAT CANADA	1	CANADA	9/72- 9/72	136
CTS-T	TEP/SHF	GRD TERM	NASA/LERC	CTS	OHIO	2/76- OPEN	839
CTS-3O	TER OF TOMORROW	GRD TERM	FCC	CTS	U.S.	3/78-12/78	56
CTS-06	TET/COMSAT	GRD TERM	COMSAT LABS	CTS	U.S.(EAST)	2/76- OPEN	266
618	TRUST	DATA TRANS	NASA/GSFC	6	U.S.	9/74- 7/75	40
666	UHF/NRL	SCIENTIFIC	NAVAL RES LAB	6	U.S.	9/77- 5/78	18
CTS-29	UNIV GRAD STUDY	EDUCATION	VARIAN ASSOC	CTS	U.S.	5/78-12/78	49
333	U. OF W. INDIES	EDUCATION	DEPT OF ST/AID	3	JAMAICA	1/78- 6/78	223
663	U. OF W. INDIES	BROADCAST	DEPT OF ST/AID	6	WEST INDIES	10/78- 7/79	66
663	U. OF W. INDIES	EDUCATION	DEPT OF ST/AID	6	WEST INDIES	10/78- 7/79	66
265	VANGUARD	DATA TRANS	USCG	3	ATLANTIC	3/72- 4/73	98
265	VANGUARD	DATA TRANS	USCG	3	PACIFIC	3/72- 4/73	98

• ATS SCHEDULED TIME/CTS ACTUAL TIME

3.2 Sorted by Experiment Name (cont.)

ID#	EXP. NAME	CAT.	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS *
265	VANGUARD	RANGING	USCG	5	ATLANTIC	3/72- 4/73	232
265	VANGUARD	RANGING	USCG	5	PACIFIC	3/72- 4/73	232
305	VHF ALOHA	COMPUTER	U. OF HAWAII	1	PACIFIC	72- OPEN	1167
185	VHF A/C	A/C COMM	ARINC	1	U.S.	1/67- 6/70	264
185	VHF A/C	A/C COMM	ARINC	3	U.S.	1/67- 6/70	308
290	VHF BERING SEA	SUPPORT	US/USSR	1	BERING SEA	12/72- 3/73	43
236	VHF BRAZIL	EDUCATION	STANFORD UNIV	3	W. HEMIS.	2/70- OPEN	38
230	VHF B/ION	SUPPORT	MAX PLANCK INST	3	W. HEMIS.	3/71- 9/71	176
230	VHF B/ION	SUPPORT	NASA/WALLOPS	3	W. HEMIS.	3/71- 9/71	176
289	VHF CALYPSO	DATA TRANS	COUSTEAU GROUP	3	ANTARCTICA	6/72- 1/76	358
289	VHF CALYPSO	SUPPORT	COUSTEAU GROUP	3	ANTARCTICA	6/72- 1/76	358
292	VHF CLIPPER	SUPPORT	MOODY COLLEGE	1	ATLANTIC	7/73- 8/77	4
292	VHF CLIPPER	SUPPORT	MOODY COLLEGE	3	ATLANTIC	6/73- 8/77	342
292	VHF CLIPPER	SUPPORT	TEXAS A&M	3	ATLANTIC	6/73- 8/77	342
310	VHF DEA	CONFERENCE	DRUG ENF AGY	3	U.S.	4/76- OPEN	131
310	VHF DEA	RANGING	GE	3	U.S.	4/76- OPEN	131
310	VHF DEA	CONFERENCE	GE	3	U.S.	4/76- OPEN	131
310	VHF DEA	RANGING	DRUG ENF AGY	3	U.S.	4/76- OPEN	131
306	VHF DRAKE	SUPPORT	TEXAS A&M	3	ANTARCTICA	1/75- OPEN	428
232	VHF EG&G	A/C COMM	EG&G	1	W. HEMIS.	6/68-10/72	48
232	VHF EG&G	SUPPORT	EG&G	1	W. HEMIS.	6/68-10/72	48
225	VHF ENGLAND	MARITIME	UNITED KINDGOM	3	ATLANTIC	8/70-12/70	191
301	VHF GATE	SUPPORT	NOAA	3	UNKNOWN	1/74- 9/74	388
228	VHF GE	DATA TRANS	GE	1	BERMUDA	2/69- 8/71	41
228	VHF GE	MARITIME	GE	1	BERMUDA	2/69- 8/71	41
228	VHF GE	RANGING	GE	1	BERMUDA	2/69- 8/71	41
228	VHF GE	DATA TRANS	GE	3	BERMUDA	2/69- 8/71	142
228	VHF GE	MARITIME	GE	3	BERMUDA	2/69- 8/71	142
228	VHF GE	RANGING	GE	3	BERMUDA	2/69- 8/71	142
235	VHF HAWAII	EDUCATION	PEACESAT	1	PACIFIC	2/72- OPEN	6942
235	VHF HAWAII	MEDICAL	PEACESAT	1	PACIFIC	2/72- OPEN	6942
284	VHF HIGH NOTE	RANGING	SANDIA/AEC	1	U.S.	3/71- 6/72	5
284	VHF HIGH NOTE	RANGING	SANDIA/AEC	3	U.S.	3/71- 6/72	5
300	VHF IHCHIS	MEDICAL	IHCHIS	1	ALASKA	5/74- 5/74	2
231	VHF MSFN PROP	WAVE PROP	MSFN NETWORK	3	W. HEMIS.	9/70- 2/71	22
238	VHF NBS	TIME/FREQ	NAT BUR OF STDS	3	W. HEMIS.	8/71- 8/72	327
226	VHF NETHERLAND	MARITIME	NETHERLANDS	3	ATLANTIC	8/70-12/71	265
295	VHF NIAID	MEDICAL	NIAID	1	PACIFIC	10/73- OPEN	237
282	VHF NLM	MEDICAL	LISTER HILL	1	U.S.(N.W.)	10/71- OPEN	619
282	VHF NLM	COMPUTER	LISTER HILL	1	U.S.(N.W.)	10/71- OPEN	619
233	VHF NORWAY	METEOR.	NORWAY	3	N. ATLANTIC	11/70- 2/71	22
233	VHF NORWAY	RANGING	NORWAY	3	N. ATLANTIC	11/70- 2/71	22
307	VHF OCEAN	SUPPORT	U. OF MIAMI	3	ATLANTIC	12/77- OPEN	2241
304	VHF OPN	TIME/FREQ.	RADIO RES LABS	1	JAPAN	67- OPEN	158
335	VHF SAR SIM	RANGING	BAKER DEV CORP	3	BERMUDA	6/77- 9/77	15
287	VHF SEEK	METEOR.	SIERRA RES CORP	3	U.S.	1/72-12/72	9
285	VHF STANFORD	EDUCATION	STANFORD UNIV	1	U.S.(WEST)	5/71- 6/72	2
285	VHF STANFORD	EDUCATION	STANFORD UNIV	3	U.S.(WEST)	5/71- 6/72	139
283	VHF UCLA	EDUCATION	UCLA	3	U.S.(WEST)	9/71-10/71	15
283	VHF UCLA	EDUCATION	TRW	3	U.S.(WEST)	9/71-10/71	15
297	VHF USP/FIJI	EDUCATION	U. SO. PACIFIC	1	PACIFIC	1/74- OPEN	2667
239	VHF VANGUARD	DATA TRANS	USCG	1	ATLANTIC	6/68- 7/69	12
239	VHF VANGUARD	CONFERENCE	USCG	1	ATLANTIC	6/68- 7/69	12
239	VHF VANGUARD	DATA TRANS	USCG	3	ATLANTIC	6/68-10/74	28
239	VHF VANGUARD	CONFERENCE	USCG	3	ATLANTIC	6/68-10/74	28

* ATS SCHEDULED TIME/CTS ACTUAL TIME

3.2 Sorted by Experiment Name (cont.)

ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS *
291	VHF ZURITA	SUPPORT	AEC	1	ALASKA/HAW.	6/73-12/73	62
602	VHRR RADIOMETER	METEOR.	NASA/GSFC	6	U.S.	6/74- 9/74	360
CTS-28	VLBI	TIME/FREQ	UNIV OF ILL	CTS	U.S./CANADA	5/78-12/78	120
163	WEFAX	METEOR.	NOAA	1	WORLD	3/69- OPEN	5957
183	WEFAX	DATA TRANS	NOAA	1	WORLD	3/69- OPEN	5957
183	WEFAX	METEOR.	NOAA	3	WORLD	3/69- OPEN	3943
183	WEFAX	DATA TRANS	NOAA	3	WORLD	3/69- OPEN	3943
322	WHOI	SUPPORT	WOODS HOLE INST	3	PACIFIC	1/77- 2/77	244
CTS-33	WIDE BAND COMM.	CONFERENCE	GTE LABS	CTS	U.S.	1/79- OPEN	6
CTS-27	WOMENS SAT SER	CONFERENCE	NAT WOMENS AS	CTS	U.S.	PENDING	C
CTS-31	3 WAY TIME TRAN	TIME/FREQ	U.S. NAVAL OBS.	CTS	U.S./CANADA	1/79- 7/79	C

* ATS SCHEDULED TIME/CTS ACTUAL TIME

3.3 Sorted by Category

ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS *
281	LOS ALAMOS	A/C COMM	EG&G	1	W. HEMIS.	10/70-10/71	265
185	VHF A/C	A/C COMM	ARINC	1	U.S.	1/67- 6/70	264
185	VHF A/C	A/C COMM	ARINC	3	U.S.	1/67- 6/70	308
232	VHF EG&G	A/C COMM	EG&G	1	W. HEMIS.	6/68-10/72	48
661	ALFE	BROADCAST	PSSC	6	ALASKA	9/77-10/78	1979
331	PLU	BROADCAST	PROJECT LOOK-UP	3	PUERTO RICO	1/76- OPEN	87
66C	PLU	BROADCAST	PROJECT LOOK-UP	6	SO.AMERICA	1/76- 7/79	141
672	SAMFE	BROADCAST	PSSC	6	SAMOA	9/77- 2/78	444
340	SAMOA TV SAMFE	BROADCAST	PSSC	1	SAMOA	9/77- OPEN	53
340	SAMOA TV SAMFE	BROADCAST	PSSC	3	SAMOA	9/77- OPEN	96
647	SITE	BROADCAST	INDIA	6	INDIA	8/75- 8/76	2171
665	U. OF W. INDIES	BROADCAST	DEPT OF ST/AID	6	WEST INDIES	10/78- 7/79	66
677	IHS	COMPUTER	INDIAN HLTH SER	6	ALASKA	9/78- 7/79	0
305	VHF ALOHA	COMPUTER	U. OF HAWAII	1	PACIFIC	72- OPEN	1167
282	VHF NLM	COMPUTER	LISTER HILL	1	U.S.(N.W.)	10/71- OPEN	619
312	ALC	CONFERENCE	AMER LUTHERAN C	1	U.S.	6/76- OPEN	219
CTS-25	CONGRESS	CONFERENCE	GEO WASH UNIV	CTS	MARYLAND	4/77- 8/78	39
338	DISP	CONFERENCE	DEPT OF INTER	1	PACIFIC	12/77- OPEN	1453
321	FLTAC	CONFERENCE	DEPT OF NAVY	3	W. HEMIS.	1/77- OPEN	391
677	IHS	CONFERENCE	INDIAN HLTH SER	6	ALASKA	9/78- 7/79	0
CTS-18	INTRANASA COMM	CONFERENCE	NASA/GSFC	CTS	U.S.	5/76- OPEN	382
CTS-18	INTRANASA COMM	CONFERENCE	NASA/LERC	CTS	U.S.	5/76- OPEN	382
CTS-18	INTRANASA COMM	CONFERENCE	NASA/ARC	CTS	U.S.	5/76- OPEN	382
CTS-26	PROJ ADJUNCT	CONFERENCE	SAT BUS SYSTEMS	CTS	VIRGINIA	9/77- 2/78	178
248	SP L-BAND	CONFERENCE	AII	5	U.S.	8/74- 4/75	135
CTS-15	TELECONFERENCE	CONFERENCE	WESTINGHOUSE	CTS	U.S.(EAST)	2/76- OPEN	286
310	VHF DEA	CONFERENCE	DRUG ENF AGY	3	U.S.	4/76- OPEN	131
310	VHF DEA	CONFERENCE	GE	3	U.S.	4/76- OPEN	131
239	VHF VANGUARD	CONFERENCE	USCG	1	ATLANTIC	6/68- 7/69	12
239	VHF VANGUARD	CONFERENCE	USCG	3	ATLANTIC	6/68-10/74	28
CTS-33	WIDE BAND COMM.	CONFERENCE	GTE LABS	CTS	U.S.	4/79- OPEN	6
CTS-27	WOMENS SAT SER	CONFERENCE	NAT WOMENS AG	CTS	U.S.	PENDING	0
661	ALFE	DATA TRANS	PSSC	6	ALASKA	9/77-10/78	1979
CTS-24	DICE	DATA TRANS	NASA/LERC	CTS	U.S.(EAST)	6/77- OPEN	131
CTS-24	DICE	DATA TRANS	COMSAT LABS	CTS	U.S.(EAST)	5/76- OPEN	131
318	DRI	DATA TRANS	DESERT RES INST	1	ANTARCTICA	12/76- 1/77	10
318	DRI	DATA TRANS	DESERT RES INST	3	ANTARCTICA	12/76- 1/77	627
315	ERDA	DATA TRANS	ERDA	1	PACIFIC	1/78- 1/79	146
315	ERDA	DATA TRANS	ERDA	3	PACIFIC	7/76- 8/76	5
620	GEOS-C	DATA TRANS	NASA/GSFC	6	WORLD	9/74- 7/79	894
293	GE/EXXON	DATA TRANS	GE & EXXON	1	ATLANTIC	7/73- 2/74	90
293	GE/EXXON	DATA TRANS	GE & EXXON	3	ATLANTIC	7/73- 2/74	186
288	GE/MARAD	DATA TRANS	GE	1	ATLANTIC	4/72- 5/72	7
288	GE/MARAD	DATA TRANS	GE	3	ATLANTIC	4/72- 5/72	46
CTS-22	ICE FLOW	DATA TRANS	NASA/LERC	CTS	ALASKA	8/76- 9/76	70
251	L-BAND DOT	DATA TRANS	BOEING	3	N. AMERICA	4/74-10/76	128
249	MARAD	DATA TRANS	MARAD	5	W. HEMIS.	3/70-12/71	65
249	MARAD	DATA TRANS	AII	5	W. HEMIS.	3/70-12/71	65
264	MARAD/AII/PLACE	DATA TRANS	AII	3	WORLD	1/73- OPEN	131
264	MARAD/AII/PLACE	DATA TRANS	AII	5	WORLD	1/73- OPEN	912
210	MSSCC	DATA TRANS	NOAA	1	WORLD	3/69- 6/72	7
210	MSSCC	DATA TRANS	NOAA	3	WORLD	3/69- OPEN	26966
605	PLACE	DATA TRANS	NASA	6	U.S.	9/74- 6/75	967
CTS-26	PROJ ADJUNCT	DATA TRANS	SAT BUS SYSTEMS	CTS	VIRGINIA	9/77- 2/78	178
CTS-19	SAT. DIST.	DATA TRANS	SECA	CTS	U.S.(SOUTH)	12/76- OPEN	655

* ATS SCHEDULED TIME/CTS ACTUAL TIME

C-3

3.3 Sorted by Category (cont.)

ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS *
246	SP L-BAND	DATA TRANS	AII	S	U.S.	8/74- 4/75	135
205	SSCC	DATA TRANS	NOAA	1	WORLD	3/69- OPEN	8372
205	SSCC	DATA TRANS	NOAA	3	WORLD	3/69- OPEN	20
617	TORE	DATA TRANS	NASA/GSFC	6	WORLD	9/74- 7/79	622
618	TRUST	DATA TRANS	NASA/GSFC	6	U.S.	9/74- 7/75	40
265	VANGUARD	DATA TRANS	USCG	3	ATLANTIC	3/72- 4/73	98
265	VANGUARD	DATA TRANS	USCG	3	PACIFIC	3/72- 4/73	98
289	VHF CALYPSO	DATA TRANS	COUSTEAU GROUP	3	ANTARCTICA	6/72- 1/76	358
228	VHF GE	DATA TRANS	GE	1	BERMUDA	2/69- 8/71	41
228	VHF GE	DATA TRANS	GE	3	BERMUDA	2/69- 8/71	142
239	VHF VANGUARD	DATA TRANS	USCG	1	ATLANTIC	6/68- 7/69	12
239	VHF VANGUARD	DATA TRANS	USCG	3	ATLANTIC	6/68-10/74	28
183	WEFAX	DATA TRANS	NOAA	1	WORLD	3/69- OPEN	5957
183	WEFAX	DATA TRANS	NOAA	3	WORLD	3/69- OPEN	3943
639	ALL DEMO	DEMO	NASA	6	U.S.	6/74- 7/79	322
311	GSFC	DEMO	NASA/GSFC	3	U.S.(EAST)	7/76- OPEN	1705
CTS-21	PSSC	DEMO	PSSC	CTS	U.S.	2/77- OPEN	284
CTS-12	AESP II	EDUCATION	APP. REG. COMM.	CTS	APPALACHIA	PENDING	0
667	ALVA	EDUCATION	PSSC	6	ALASKA	9/77- 7/79	69
667	ALVA	EDUCATION	PSSC	6	U.S.(WEST)	9/77- 7/79	69
CTS-07	BIOMED COMMUN	EDUCATION	LISTER HILL	CTS	U.S.	6/77- OPEN	404
CTS-04	COLLEGE CURR	EDUCATION	STANFORD UNIV	CTS	U.S./CANADA	2/76- OPEN	446
CTS-04	COLLEGE CURR	EDUCATION	CARLETON UNIV	CTS	U.S./CANADA	2/76- OPEN	446
CTS-13	DECENT MED ED	EDUCATION	WAMI	CTS	ALASKA/WASH	3/77- OPEN	292
CTS-13	DECENT MED ED	EDUCATION	U OF WASHINGTON	CTS	ALASKA/WASH	3/77- OPEN	292
CTS-17	HEALTH ED TV	EDUCATION	ASSOC OF W HOSP	CTS	ROCKY MTNS	PENDING	0
CTS-11	HEALTH/COMMUN	EDUCATION	VETERANS ADM	CTS	U.S.(WEST)	6/77- OPEN	306
227	HET ALASKA	EDUCATION	ST. OF ALASKA	1	ALASKA	6/69- OPEN	11314
227	HET ALASKA	EDUCATION	NAT EDUC ASSOC	1	W. HEMIS.	6/69- OPEN	11314
286	HET(ARC)	EDUCATION	APP. REG. COMM.	3	APPALACHIA	6/74- OPEN	536
612	HET(ARC)	EDUCATION	ST. OF ALASKA	6	ALASKA	6/74- 6/75	1741
612	HET(ARC)	EDUCATION	ROCKY MTN STS	6	ROCKY MTNS	6/74- 6/75	1741
612	HET(ARC)	EDUCATION	APP. REG. COMM.	6	APPALACHIA	6/74- 6/75	1741
612	HET(ARC)	EDUCATION	VETERANS ADM	6	APPALACHIA	6/74- 6/75	1741
612	HET(ARC)	EDUCATION	WAMI	6	ALASKA/WASH	6/74- 6/75	1741
302	NEA	EDUCATION	NAT EDUC ASSOC	1	APPAL/ALASK	1/76- 4/77	39
302	NEA	EDUCATION	NAT EDUC ASSOC	3	APPAL/ALASK	1/76- 4/77	76
673	NIE	EDUCATION	APP. REG. COMM.	6	APPALACHIA	1/78- 7/79	3
331	PLU	EDUCATION	PROJECT LOOK-UP	3	PUERTO RICO	1/76- OPEN	87
660	PLU	EDUCATION	PROJECT LOOK-UP	6	SO.AMERICA	1/76- 7/79	141
CTS-16	PROJ INTERCHG	EDUCATION	ARCH OF S.F.	CTS	CALIFORNIA	3/76- 6/78	45
CTS-09	SALINET	EDUCATION	SALINET	CTS	U.S.	10/77- 4/78	10
320	SAMOA	EDUCATION	U. SO. PACIFIC	1	SAMOA	1/77- OPEN	258
647	SITE	EDUCATION	INDIA	6	INDIA	8/75- 8/76	2171
670	TEAM	EDUCATION	MONTANA ST U	6	MONTANA	9/77- 7/79	2
CTS-29	UNIV GRAD STUDY	EDUCATION	VARIAN ASSOC	CTS	U.S.	5/78-12/78	49
333	U. OF W. INDIES	EDUCATION	DEPT OF ST/AID	3	JAMAICA	1/78- 6/78	223
663	U. OF W. INDIES	EDUCATION	DEPT OF ST/AID	6	WEST INDIES	10/78- 7/79	66
236	VHF BRAZIL	EDUCATION	STANFORD UNIV	3	W. HEMIS.	2/70- OPEN	38
235	VHF HAWAII	EDUCATION	PEACESAT	1	PACIFIC	2/72- OPEN	6942
285	VHF STANFORD	EDUCATION	STANFORD UNIV	1	U.S.(WEST)	5/71- 6/72	2
285	VHF STANFORD	EDUCATION	STANFORD UNIV	3	U.S.(WEST)	5/71- 6/72	139
283	VHF UCLA	EDUCATION	UCLA	3	U.S.(WEST)	9/71-10/71	15
283	VHF UCLA	EDUCATION	TRW	3	U.S.(WEST)	9/71-10/71	15
297	VHF USP/FIJI	EDUCATION	U. SO. PACIFIC	1	PACIFIC	1/74- OPEN	2667

* ATS SCHEDULED TIME/CTS ACTUAL TIME

3.3 Sorted by Category (cont.)

ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS *
CTS-20	ADV GRD REC EQ	GRD TERM	NASA/GSFC	CTS	U.S.	4/76- 4/78	87
CTS-T	TEP/SHF	GRD TERM	NASA/LERC	CTS	OHIO	2/76- OPEN	839
CTS-30	TER OF TOMORROW	GRD TERM	FCC	CTS	U.S.	3/78-12/78	56
CTS-06	TET/COMSAT	GRD TERM	COMSAT LABS	CTS	U.S.(EAST)	2/76- OPEN	266
258	SHF SEARCH	LAW ENFORC	PUBLIC SYST INC	1	U.S.	12/71-12/71	68
293	GE/EXXON	MARITIME	GE & EXXON	1	ATLANTIC	7/73- 2/74	90
293	GE/EXXON	MARITIME	GE & EXXON	3	ATLANTIC	7/73- 2/74	186
288	GE/MARAD	MARITIME	GE	1	ATLANTIC	4/72- 5/72	7
288	GE/MARAD	MARITIME	GE	3	ATLANTIC	4/72- 5/72	46
249	MARAD	MARITIME	MARAD	5	W. HEMIS.	3/70-12/71	65
249	MARAD	MARITIME	AII	5	W. HEMIS.	3/70-12/71	65
264	MARAD/AII/PLACE	MARITIME	AII	3	WORLD	1/73- OPEN	131
264	MARAD/AII/PLACE	MARITIME	AII	5	WORLD	1/73- OPEN	912
225	VHF ENGLAND	MARITIME	UNITED KINGDOM	3	ATLANTIC	8/70-12/70	191
228	VHF GE	MARITIME	GE	1	BERMUDA	2/69- 8/71	41
228	VHF GE	MARITIME	GE	3	BERMUDA	2/69- 8/71	142
226	VHF NETHERLAND	MARITIME	NETHERLANDS	3	ATLANTIC	8/70-12/71	265
667	ALVA	MEDICAL	PSSC	6	ALASKA	9/77- 7/79	69
667	ALVA	MEDICAL	PSSC	6	U.S.(WEST)	9/77- 7/79	69
344	BARBADOS	MEDICAL	DEPT OF ST/AID	3	BARBADOS	8/78- 9/78	14
CTS-07	BIOMED COMMUN	MEDICAL	LISTER HILL	CTS	U.S.	6/77- OPEN	404
CTS-35	CT SCANNING NET	MEDICAL	U. OF COLORADO	CTS	U.S.(WEST)	4/79- 7/79	0
102	DATA XMISSION	MEDICAL	DUKE U. MED CEN	1	U.S.(EAST)	11/71-11/71	54
CTS-13	DECENT MED ED	MEDICAL	WAMI	CTS	ALASKA/WASH	3/77- OPEN	292
CTS-17	HEALTH ED TV	MEDICAL	ASSOC OF U HOSP	CTS	ROCKY MTNS	PENDING	0
CTS-11	HEALTH/COMMUN	MEDICAL	VETERANS ADM	CTS	U.S.(WEST)	6/77- OPEN	306
227	MET ALASKA	MEDICAL	ST. OF ALASKA	1	ALASKA	6/69- OPEN	11314
612	MET(ARC)	MEDICAL	INDIAN HLTH SER	6	ALASKA	6/74- 6/75	1741
612	MET(ARC)	MEDICAL	VETERANS ADM	6	APPALACHIA	6/74- 6/75	1741
612	MET(ARC)	MEDICAL	WAMI	6	ALASKA/WASH	6/74- 6/75	1741
677	IHS	MEDICAL	INDIAN HLTH SER	6	ALASKA	9/78- 7/79	0
671	MSH	MEDICAL	MTN STS HTH COR	6	ROCKY MTNS	3/75- 5/75	22
316	NSTL	MEDICAL	SG REQ MED CONS	3	U.S.(SOUTH)	10/76-10/76	71
316	NSTL	MEDICAL	NAT SP TECH LAB	3	U.S.(SOUTH)	10/76-10/76	71
235	VHF HAWAII	MEDICAL	PEACESAT	1	PACIFIC	2/72- OPEN	6942
300	VHF IHCHIS	MEDICAL	IHCHIS	1	ALASKA	5/74- 5/74	2
295	VHF NIAID	MEDICAL	NIAID	1	PACIFIC	10/73- OPEN	237
282	VHF NLM	MEDICAL	LISTER HILL	1	U.S.(N.W.)	10/71- OPEN	619
318	DRI	METEOR.	DESERT RES INST	1	ANTARCTICA	12/76- 1/77	10
318	DRI	METEOR.	DESERT RES INST	3	ANTARCTICA	12/76- 1/77	627
211	IDCS	METEOR.	NOAA	3	U.S.	11/67-10/72	1050
210	MSSCC	METEOR.	NOAA	1	WORLD	3/69- 6/72	7
210	MSSCC	METEOR.	NOAA	3	WORLD	3/69- OPEN	26966
205	SSCC	METEOR.	NOAA	1	WORLD	3/69- OPEN	8372
205	SSCC	METEOR.	NOAA	3	WORLD	3/69- OPEN	20
233	VHF NORWAY	METEOR.	NORWAY	3	N. ATLANTIC	11/70- 2/71	22
287	VHF SEEK	METEOR.	SIERRA RES CORP	3	U.S.	1/72-12/72	9
602	VHRR RADIOMETER	METEOR.	NASA/GSFC	6	U.S.	6/74- 9/74	360
183	WEFAX	METEOR.	NOAA	1	WORLD	3/69- OPEN	5957
183	WEFAX	METEOR.	NOAA	3	WORLD	3/69- OPEN	3943
247	ALPHA-2	RANGING	USAF/SAMSO	5	ATLANTIC	7/70- 2/71	88
247	ALPHA-2	RANGING	AII	5	ATLANTIC	7/70- 2/71	88
657	CRC	RANGING	CANADA/CRC	6	CANADA	9/74- 8/77	138
261	GE L-BAND	RANGING	GE	1	N. AMERICA	6/70-10/72	1
261	GE L-BAND	RANGING	GE	3	N. AMERICA	6/70-10/72	51

* ATS SCHEDULED TIME/CTS ACTUAL TIME

3.3 Sorted by Category (cont.)

ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS *
261	GE L-BAND	RANGING	GE	5	N. AMERICA	6/70- 6/73	182
674	GE L-BAND	RANGING	GE	6	U.S.(EAST)	12/77- 7/79	573
293	GE/EXXON	RANGING	GE & EXXON	1	ATLANTIC	7/73- 2/74	90
293	GE/EXXON	RANGING	GE & EXXON	3	ATLANTIC	7/73- 2/74	186
234	GE/FAA	RANGING	GE	1	N. ATLANTIC	11/69- 6/71	4
234	GE/FAA	RANGING	GE	3	N. ATLANTIC	11/69- 6/71	44
288	GE/MARAD	RANGING	GE	1	ATLANTIC	4/72- 5/72	7
288	GE/MARAD	RANGING	GE	3	ATLANTIC	4/72- 5/72	46
251	L-BAND DOT	RANGING	BOEING	5	N. AMERICA	8/71- 7/74	557
252	L-BAND FAA	RANGING	FAA	5	N. AMERICA	4/71- 4/72	275
252	L-BAND FAA	RANGING	BOEING	5	N. AMERICA	4/71- 4/72	275
250	L-BAND RANGING	RANGING	WESTINGHOUSE	1	U.S.(WEST)	2/71- 5/71	6
250	L-BAND RANGING	RANGING	WESTINGHOUSE	3	U.S.(WEST)	2/71- 5/71	0
250	L-BAND RANGING	RANGING	WESTINGHOUSE	5	U.S.(WEST)	2/71- 5/71	99
268	L-BAND TRILAT	RANGING	GE	1	U.S.	1/74- 1/76	19
268	L-BAND TRILAT	RANGING	GE	3	U.S.	1/74- 1/76	98
268	L-BAND TRILAT	RANGING	GE	5	U.S.	1/74- 1/76	172
249	MARAD	RANGING	AII	5	N. HEMIS.	3/70-12/71	65
264	MARAD/AII/PLACE	RANGING	AII	5	WORLD	1/73- OPEN	912
605	PLACE	RANGING	NASA	6	U.S.	9/74- 6/75	967
664	SAR L-BAND C/O	RANGING	FAA	6	N. ATLANTIC	8/74- 4/75	13
664	SAR L-BAND C/O	RANGING	BOEING	6	N. ATLANTIC	8/74- 4/75	13
319	SIRIUS	RANGING	BAKER DEV CORP	3	BERMUDA	12/76- 1/77	40
246	SSRA	RANGING	WESTINGHOUSE	5	U.S.(WEST)	4/71- 5/71	1
265	VANGUARD	RANGING	USCG	5	ATLANTIC	3/72- 4/73	232
265	VANGUARD	RANGING	USCG	5	PACIFIC	3/72- 4/73	232
310	VHF DEA	RANGING	GE	3	U.S.	4/76- OPEN	131
310	VHF DEA	RANGING	DRUG ENF AGY	3	U.S.	4/76- OPEN	131
228	VHF GE	RANGING	GE	1	BERMUDA	2/69- 8/71	41
228	VHF GE	RANGING	GE	3	BERMUDA	2/69- 8/71	142
284	VHF HIGH NOTE	RANGING	SANDIA/AEC	1	U.S.	3/71- 6/72	5
284	VHF HIGH NOTE	RANGING	SANDIA/AEC	3	U.S.	3/71- 6/72	5
233	VHF NORWAY	RANGING	NORWAY	3	N. ATLANTIC	11/70- 2/71	22
335	VHF SAR SIM	RANGING	BAKER DEV CORP	3	BERMUDA	6/77- 9/77	13
620	GEOS-C	SAT CONTRL	NASA/GSFC	6	WORLD	9/74- 7/79	894
607	IMDRAS	SAT CONTRL	NASA/GSFC	6	U.S.	6/74- 7/75	5
610	INTERFEROMETER	SAT CONTRL	NASA/GSFC	6	U.S.	6/74-11/78	104
604	SAPPSAC	SAT CONTRL	NASA/GSFC	6	U.S.	6/74- 1/75	72
617	TDRE	SAT CONTRL	NASA/GSFC	6	WORLD	9/74- 7/79	622
211	IDCS	SAT PHOTOS	NOAA	3	U.S.	11/67-10/72	1050
631	ENV MEAS EXP	SCIENTIFIC	NASA/GSFC	6	U.S.	6/74- 7/77	50
650	MAG DATA	SCIENTIFIC	UCLA	6	U.S.	5/75- 8/76	903
649	MAG FIELD STUDY	SCIENTIFIC	NASA/GSFC	6	U.S.	4/75- 6/75	295
666	UHF/NRL	SCIENTIFIC	NAVAL RES LAB	6	U.S.	9/77- 5/78	18
640	APOLLO-SOYUZ	SUPPORT	NASA/HOUSTON	6	WORLD	10/74- 7/75	333
332	ENDEAVOR	SUPPORT	U. OF RHODE ISL	3	ATLANTIC	7/77- 1/78	168
315	ERDA	SUPPORT	ERDA	1	PACIFIC	1/78- 1/79	146
315	ERDA	SUPPORT	ERDA	3	PACIFIC	7/76- 8/76	5
336	ERDA/DOD	SUPPORT	ERDA	1	ENEWETAK	10/77- 9/78	49
674	GE L-BAND	SUPPORT	GE	6	U.S.(EAST)	12/77- 7/79	573
325	GYRE	SUPPORT	TEXAS A&M	3	N. HEMIS.	4/77-10/78	315
317	LAMONT	SUPPORT	LAMONT/DOHERTY	3	SO. OCEAN	10/76- 3/77	161
108	LAUNCH SUPPORT	SUPPORT	NASA	1	U.S.	1/67- 1/76	930
108	LAUNCH SUPPORT	SUPPORT	NASA	3	U.S.	1/67- 8/76	369
108	LAUNCH SUPPORT	SUPPORT	NASA	5	U.S.	3/67-10/72	69

* ATS SCHEDULED TIME/CTS ACTUAL TIME

3.3 Sorted by Category (cont.)

ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS •
108	LAUNCH SUPPORT	SUPPORT	NASA	6	U.S.	7/77- 2/78	7
330	MONTANA	SUPPORT	ST. OF MONTANA	3	MONTANA	6/77-11/77	163
329	NORPAX	SUPPORT	U. OF CAL/NAVY	1	N. PACIFIC	5/77- 6/77	53
309	NSF	SUPPORT	TEXAS A&M	3	ATLANTIC	3/76- 9/76	161
343	ORANGE	SUPPORT	NAT. SC. FOUND.	3	ANTARCTICA	7/78- 8/78	176
342	PERU	SUPPORT	ADVENTURES UNL.	3	PERU	6/78- 7/78	46
CTS-21	PSSC	SUPPORT	PSSC	CTS	U.S.	2/77- OPEN	284
324	SIPLE	SUPPORT	STANFORD UNIV	3	W. HEMIS.	2/77- OPEN	1166
319	SIRIUS	SUPPORT	BAKER DEV CORP	3	BERMUDA	12/76- 1/77	40
107	SPEC SHF	SUPPORT	GE	1	W. HEMIS.	68- 70	1929
107	SPEC SHF	SUPPORT	GE	3	W. HEMIS.	68- 70	1613
294	SP HET	SUPPORT	HET	1	U.S.	1/73- 8/77	1654
294	SP HET	SUPPORT	HET	3	U.S.	1/73- 8/77	1918
202	S/C SUPPORT	SUPPORT	NASA	1	W. HEMIS.	4/69- 70	270
290	VHF BERING SEA	SUPPORT	US/USSR	1	BERING SEA	12/72- 3/73	43
230	VHF B/ION	SUPPORT	MAX PLANCK INST	3	W. HEMIS.	3/71- 9/71	176
230	VHF B/ION	SUPPORT	NASA/WALLOPS	3	W. HEMIS.	3/71- 9/71	176
289	VHF CALYPSO	SUPPORT	COUSTEAU GROUP	3	ANTARCTICA	6/72- 1/76	358
292	VHF CLIPPER	SUPPORT	MOODY COLLEGE	1	ATLANTIC	7/73- 8/77	4
292	VHF CLIPPER	SUPPORT	MOODY COLLEGE	3	ATLANTIC	6/73- 8/77	342
292	VHF CLIPPER	SUPPORT	TEXAS A&M	3	ATLANTIC	6/73- 8/77	342
306	VHF DRAKE	SUPPORT	TEXAS A&M	3	ANTARCTICA	1/75- OPEN	428
232	VHF EG&G	SUPPORT	EG&G	1	W. HEMIS.	6/68-10/72	48
301	VHF GATE	SUPPORT	NOAA	3	UNKNOWN	1/74- 9/74	388
307	VHF OCEAN	SUPPORT	U. OF MIAMI	3	ATLANTIC	12/77- OPEN	2241
291	VHF ZURITA	SUPPORT	AEC	1	ALASKA/HAW.	6/73-12/73	62
322	WHOI	SUPPORT	WOODS HOLE INST	3	PACIFIC	1/77- 2/77	244
253	SHF VLBI	TIME/FREQ	SMITHSONIAN INS	1	U.S.	5/71-10/72	2
253	SHF VLBI	TIME/FREQ	RADIO RES LABS	1	JAPAN	1/77- 2/77	5
253	SHF VLBI	TIME/FREQ	SMITHSONIAN INS	3	U.S.	5/71-10/72	190
253	SHF VLBI	TIME/FREQ	RADIO RES LABS	3	JAPAN	1/77- 2/77	190
253	SHF VLBI	TIME/FREQ	SMITHSONIAN INS	5	U.S.	5/71-10/72	0
238	VHF NBS	TIME/FREQ	NAT BUR OF STDS	3	W. HEMIS.	8/71- 8/72	327
304	VHF OPN	TIME/FREQ	RADIO RES LABS	1	JAPAN	67- OPEN	158
CTS-28	VLBI	TIME/FREQ	UNIV OF ILL	CTS	U.S./CANADA	5/78-12/78	120
CTS-31	3 WAY TIME TRAN	TIME/FREQ	U.S. NAVAL OBS.	CTS	U.S./CANADA	1/79- 7/79	0
CTS-01	COMM LINK CHAR	WAVE PROP	NASA/GSFC	CTS	U.S.	2/76-12/77	315
CTS-01	COMM LINK CHAR	WAVE PROP	OHIO STATE U	CTS	OHIO	2/76-12/77	315
CTS-01	COMM LINK CHAR	WAVE PROP	VIRGINIA POLY	CTS	VIRGINIA	2/76-12/77	315
CTS-01	COMM LINK CHAR	WAVE PROP	U. OF TEXAS	CTS	TEXAS	2/76-12/77	315
259	COMSAT C/L PROP	WAVE PROP	COMSAT LABS	5	W. HEMIS.	1/72- 4/72	37
638	COMSAT PROP IND	WAVE PROP	COMSAT LABS	6	EUROPE	3/76- 7/76	667
658	COMSAT PROP US	WAVE PROP	COMSAT LABS	6	U.S.(EAST)	6/78- 6/78	159
260	CRC C/L-BAND	WAVE PROP	CANADA	5	CANADA	9/71- 5/72	113
623	L-BAND EXP	WAVE PROP	U. OF PA	6	U.S.(EAST)	8/76- 3/77	787
244	MMW REG 1	WAVE PROP	NASA/GSFC	5	N. AMERICA	8/69- 9/71	1866
245	MMW REG 2	WAVE PROP	NASA/GSFC	5	N. AMERICA	8/69- 9/71	326
609	MMW	WAVE PROP	NASA/GSFC	6	U.S.	6/79- 7/79	3271
609	MMW	WAVE PROP	U. OF TEXAS	6	TEXAS	6/79- 7/79	3271
609	MMW	WAVE PROP	OHIO STATE U.	6	OHIO	6/79- 7/79	3271
609	MMW	WAVE PROP	COMSAT LABS	6	VIRGINIA	6/79- 7/79	3271
609	MMW	WAVE PROP	WESTINGHOUSE	6	MARYLAND	6/79- 7/79	3271
609	MMW	WAVE PROP	NAVAL RES LAB	6	MARYLAND	6/79- 7/79	3271
609	MMW	WAVE PROP	VIRGINIA POLY	6	VIRGINIA	6/79- 7/79	3271
609	MMW	WAVE PROP	BATTELLE LAB	6	WASHINGTON	6/79- 7/79	3271

• ATS SCHEDULED TIME/CTS ACTUAL TIME

3.3 Sorted by Category (cont.)

ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS *
609	MMW	WAVE PROP	BELL LAB	6	NEW JERSEY	6/74- 7/79	3271
609	MMW	WAVE PROP	ARMY	6	NEW JERSEY	6/74- 7/79	3271
666	MOTOROLA	WAVE PROP	MOTOROLA	6	U.S.	7/77- 9/78	47
608	PROPAGATION(E)	WAVE PROP	ESTEC	6	EUROPE	8/75-10/76	2263
606	RADIO BEACON	WAVE PROP	NOAA	6	U.S.	6/74- 7/79	0
606	RADIO BEACON	WAVE PROP	NOAA	6	EUROPE	6/74- 7/79	0
601	RADIO FREQ INT.	WAVE PROP	NASA/GSFC	6	U.S.	6/74-12/76	877
603	RAD ASTRO INTER	WAVE PROP	NASA/GSFC	6	WORLD	6/74- 6/75	9
257	SHF CRC	WAVE PROP	CANADA/CRC	1	CANADA	1/71-12/71	76
263	TELESAT	WAVE PROP	TELESAT CANADA	1	CANADA	9/72- 9/72	136
231	VHF MSFN PROP	WAVE PROP	MSFN NETWORK	3	U. MENIS.	9/70- 2/71	22

* ATS SCHEDULED TIME/CTS ACTUAL TIME

3.4 Sorted by Experimenter

ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS *
342	PERU	SUPPORT	ADVENTURES UNL.	3	PERU	6/78- 7/78	46
291	VHF ZURITA	SUPPORT	AEC	1	ALASKA/HAW.	6/73-12/73	62
246	SP L-BAND	CONFERENCE	AII	5	U.S.	8/74- 4/75	135
249	MARAD	DATA TRANS	AII	5	W. HEMIS.	3/70-12/71	65
264	MARAD/AII/PLACE	DATA TRANS	AII	3	WORLD	1/73- OPEN	131
264	MARAD/AII/PLACE	DATA TRANS	AII	5	WORLD	1/73- OPEN	912
248	SP L-BAND	DATA TRANS	AII	5	U.S.	8/74- 4/75	135
249	MARAD	MARITIME	AII	5	W. HEMIS.	3/70-12/71	65
264	MARAD/AII/PLACE	MARITIME	AII	3	WORLD	1/73- OPEN	131
264	MARAD/AII/PLACE	MARITIME	AII	5	WORLD	1/73- OPEN	912
247	ALPHA-2	RANGING	AII	5	ATLANTIC	7/70- 2/71	88
249	MARAD	RANGING	AII	5	W. HEMIS.	3/70-12/71	65
264	MARAD/AII/PLACE	RANGING	AII	5	WORLD	1/73- OPEN	912
312	ALC	CONFERENCE	AMER LUTHERAN C	1	U.S.	6/76- OPEN	219
CTS-12	AESP II	EDUCATION	APP. REG. COMM.	CTS	APPALACHIA	PENDING	0
286	HET(ARC)	EDUCATION	APP. REG. COMM.	3	APPALACHIA	6/74- OPEN	536
612	HET(ARC)	EDUCATION	APP. REG. COMM.	6	APPALACHIA	6/74- 6/75	1741
673	NIE	EDUCATION	APP. REG. COMM.	6	APPALACHIA	1/78- 7/79	3
CTS-16	PROJ INTERCHG	EDUCATION	ARCH OF S.F.	CTS	CALIFORNIA	3/76- 6/78	45
185	VHF A/C	A/C COMM	ARINC	1	U.S.	1/67- 6/70	264
185	VHF A/C	A/C COMM	ARINC	3	U.S.	1/67- 6/70	308
609	MMW	WAVE PROP	ARMY	6	NEW JERSEY	6/74- 7/79	3271
CTS-17	HEALTH ED TV	EDUCATION	ASSOC OF W HOSP	CTS	ROCKY MTNS	PENDING	0
CTS-17	HEALTH ED TV	MEDICAL	ASSOC OF W HOSP	CTS	ROCKY MTNS	PENDING	0
319	SIRIUS	RANGING	BAKER DEV CORP	3	BERMUDA	12/76- 1/77	40
335	VHF SAR SIM	RANGING	BAKER DEV CORP	3	BERMUDA	6/77- 9/77	15
319	SIRIUS	SUPPORT	BAKER DEV CORP	3	BERMUDA	12/76- 1/77	40
609	MMW	WAVE PROP	BATTELLE LAB	6	WASHINGTON	6/74- 7/79	3271
609	MMW	WAVE PROP	BELL LAB	6	NEW JERSEY	6/74- 7/79	3271
251	L-BAND DOT	DATA TRANS	BOEING	3	N. AMERICA	4/74-10/76	128
251	L-BAND DOT	RANGING	BOEING	5	N. AMERICA	2/71- 7/74	557
252	L-BAND FTA	RANGING	BOEING	5	N. AMERICA	4/71- 4/72	275
664	SAR L-BAND C/O	RANGING	BOEING	6	N. ATLANTIC	8/74- 4/75	13
260	CRC C/L-BAND	WAVE PROP	CANADA	5	CANADA	4/71- 5/72	113
657	CRC	RANGING	CANADA/CRC	6	CANADA	9/74- 8/77	138
257	SHF CRC	WAVE PROP	CANADA/CRC	1	CANADA	1/71-12/71	76
CTS-04	COLLEGE CURR	EDUCATION	CARLETON UNIV	CTS	U.S./CANADA	2/76- OPEN	446
CTS-24	DICE	DATA TRANS	COMSAT LABS	CTS	U.S.(EAST)	5/76- OPEN	131
CTS-06	TET/COMSAT	GRD TERM	COMSAT LABS	CTS	U.S.(EAST)	2/76- OPEN	266
259	COMSAT C/L PROP	WAVE PROP	COMSAT LABS	5	W. HEMIS.	1/72- 4/72	37
638	COMSAT PROP IND	WAVE PROP	COMSAT LABS	6	EUROPE	3/76- 7/76	667
658	COMSAT PROP US	WAVE PROP	COMSAT LABS	6	U.S.(EAST)	6/74- 6/78	159
609	MMW	WAVE PROP	COMSAT LABS	6	VIRGINIA	6/74- 7/79	3271
289	VHF CALYPSO	DATA TRANS	COUSTEAU GROUP	3	ANTARCTICA	6/72- 1/76	358
289	VHF CALYPSO	SUPPORT	COUSTEAU GROUP	3	ANTARCTICA	6/72- 1/76	358
336	DISP	CONFERENCE	DEPT OF INTER	1	PACIFIC	12/77- OPEN	1453
321	FLTAC	CONFERENCE	DEPT OF NAVY	3	W. HEMIS.	1/77- OPEN	391
663	U. OF W. INDIES	BROADCAST	DEPT OF ST/AID	6	WEST INDIES	10/78- 7/79	66
333	U. OF W. INDIES	EDUCATION	DEPT OF ST/AID	3	JAMAICA	1/78- 6/78	223
663	U. OF W. INDIES	EDUCATION	DEPT OF ST/AID	6	WEST INDIES	10/78- 7/79	66
344	BARBADOS	MEDICAL	DEPT OF ST/AID	3	BARBADOS	8/78- 9/78	14
318	DRI	DATA TRANS	DESERT RES INST	1	ANTARCTICA	12/76- 1/77	10
318	DRI	DATA TRANS	DESERT RES INST	3	ANTARCTICA	12/76- 1/77	627
318	DRI	METEOR.	DESERT RES INST	1	ANTARCTICA	12/76- 1/77	10
318	DRI	METEOR.	DESERT RES INST	3	ANTARCTICA	12/76- 1/77	627

* ATS SCHEDULED TIME/CTS ACTUAL TIME

3.4 Sorted by Experimenter (cont.)

ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS •
310	VHF DEA	CONFERENCE	DRUG ENF AGY	3	U.S.	4/76- OPEN	131
310	VHF DEA	RANGING	DRUG ENF AGY	3	U.S.	4/76- OPEN	131
102	DATA XMISSION	MEDICAL	DUKE U. MED CEN	1	U.S.(EAST)	11/71-11/71	54
281	LOS ALAMOS	A/C COMM	EG&G	1	W. HEMIS.	10/70-10/71	265
232	VHF EG&G	A/C COMM	EG&G	1	W. HEMIS.	6/68-10/72	46
232	VHF EG&G	SUPPORT	EG&G	1	W. HEMIS.	6/68-10/72	46
315	ERDA	DATA TRANS	ERDA	1	PACIFIC	1/78- 1/79	146
315	ERDA	DATA TRANS	ERDA	3	PACIFIC	7/76- 8/76	5
315	ERDA	SUPPORT	ERDA	1	PACIFIC	1/78- 1/79	146
315	ERDA	SUPPORT	ERDA	3	PACIFIC	7/76- 8/76	5
336	ERDA/DOD	SUPPORT	ERDA	1	ENEWETAK	10/77- 9/78	49
[illegible]	PROPAGATION(E)	WAVE PROP	ESTEC	6	EUROPE	8/75-10/76	2263
262	L-BAND FAA	RANGING	FAA	5	N. AMERICA	4/71- 4/72	275
664	SAR L-BAND C/O	RANGING	FAA	6	N. ATLANTIC	8/74- 4/75	13
CTS-30	TER OF TOMORROW	GRD TERM	FCC	CTS	U.S.	3/78-12/78	56
CTS-25	CONGRESS	CONFERENCE	GEO WASH UNIV	CTS	MARYLAND	4/77- 8/78	39
310	VHF DEA	CONFERENCE	GE	3	U.S.	4/76- OPEN	131
288	GE/MARAD	DATA TRANS	GE	1	ATLANTIC	4/72- 5/72	7
288	GE/MARAD	DATA TRANS	GE	3	ATLANTIC	4/72- 5/72	46
228	VHF GE	DATA TRANS	GE	1	BERMUDA	2/69- 8/71	41
228	VHF GE	DATA TRANS	GE	3	BERMUDA	2/69- 8/71	142
288	GE/MARAD	MARITIME	GE	1	ATLANTIC	4/72- 5/72	7
288	GE/MARAD	MARITIME	GE	3	ATLANTIC	4/72- 5/72	46
228	VHF GE	MARITIME	GE	1	BERMUDA	2/69- 8/71	41
228	VHF GE	MARITIME	GE	3	BERMUDA	2/69- 8/71	142
261	GE L-BAND	RANGING	GE	1	N. AMERICA	6/70-10/72	1
261	GE L-BAND	RANGING	GE	3	N. AMERICA	6/70-10/72	51
261	GE L-BAND	RANGING	GE	5	N. AMERICA	6/70- 6/73	152
674	GE L-BAND	RANGING	GE	6	U.S.(EAST)	12/77- 7/79	573
234	GE/FAA	RANGING	GE	1	N. ATLANTIC	11/69- 6/71	4
234	GE/FAA	RANGING	GE	3	N. ATLANTIC	11/69- 6/71	44
288	GE/MARAD	RANGING	GE	1	ATLANTIC	4/72- 5/72	7
288	GE/MARAD	RANGING	GE	3	ATLANTIC	4/72- 5/72	46
268	L-BAND TRILAT	RANGING	GE	1	U.S.	1/74- 1/76	19
268	L-BAND TRILAT	RANGING	GE	3	U.S.	1/74- 1/76	98
268	L-BAND TRILAT	RANGING	GE	5	U.S.	1/74- 1/76	172
310	VHF DEA	RANGING	GE	3	U.S.	4/76- OPEN	131
228	VHF GE	RANGING	GE	1	BERMUDA	2/69- 8/71	41
228	VHF GE	RANGING	GE	3	BERMUDA	2/69- 8/71	142
674	GE L-BAND	SUPPORT	GE	6	U.S.(EAST)	12/77- 7/79	573
107	SPEC SHF	SUPPORT	GE	1	W. HEMIS.	68- 70	1929
107	SPEC SHF	SUPPORT	GE	3	W. HEMIS.	68- 70	1613
293	GE/EXXON	DATA TRANS	GE & EXXON	1	ATLANTIC	7/73- 2/74	90
293	GE/EXXON	DATA TRANS	GE & EXXON	3	ATLANTIC	7/73- 2/74	186
293	GE/EXXON	MARITIME	GE & EXXON	1	ATLANTIC	7/73- 2/74	90
293	GE/EXXON	MARITIME	GE & EXXON	3	ATLANTIC	7/73- 2/74	186
293	GE/EXXON	RANGING	GE & EXXON	1	ATLANTIC	7/73- 2/74	90
293	GE/EXXON	RANGING	GE & EXXON	3	ATLANTIC	7/73- 2/74	186
CTS-33	WIDE BAND COMM.	CONFERENCE	GTE LABS	CTS	U.S.	1/79- OPEN	6
294	SP HET	SUPPORT	HET	1	U.S.	1/73- 8/77	1654
294	SP HET	SUPPORT	HET	3	U.S.	1/73- 8/77	1918
300	VHF IHCHIS	MEDICAL	IHCHIS	1	ALASKA	5/74- 5/74	2
677	IHS	COMPUTER	INDIAN HLTH SER	6	ALASKA	9/78- 7/79	0
677	IHS	CONFERENCE	INDIAN HLTH SER	6	ALASKA	9/78- 7/79	0
612	HET(ARC)	MEDICAL	INDIAN HLTH SER	6	ALASKA	6/74- 6/75	1741

• ATS SCHEDULED TIME/CTS ACTUAL TIME

3.4 Sorted by Experimenter (cont.)

ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS •
677	IMS	MEDICAL	INDIAN HLTH SER	6	ALASKA	9/78- 7/79	0
647	SITE	BROADCAST	INDIA	6	INDIA	8/75- 8/76	2171
647	SITE	EDUCATION	INDIA	6	INDIA	8/75- 8/76	2171
317	LAMONT	SUPPORT	LAMONT/DOHERTY	3	SO. OCEAN	10/76- 3/77	161
282	VHF NLM	COMPUTER	LISTER HILL	1	U.S.(N.W.)	10/71- OPEN	619
CTS-07	BIOMED COMMUN	EDUCATION	LISTER HILL	CTS	U.S.	6/77- OPEN	404
CTS-07	BIOMED COMMUN	MEDICAL	LISTER HILL	CTS	U.S.	6/77- OPEN	404
282	VHF NLM	MEDICAL	LISTER HILL	1	U.S.(N.W.)	10/71- OPEN	619
249	MARAD	DATA TRANS	MARAD	5	W. HEMIS.	3/70-12/71	65
249	MARAD	MARITIME	MARAD	5	W. HEMIS.	3/70-12/71	65
230	VHF B/ION	SUPPORT	MAX PLANCK INST	3	W. HEMIS.	3/71- 9/71	176
670	TEAM	EDUCATION	MONTANA ST U	6	MONTANA	9/77- 7/79	2
292	VHF CLIPPER	SUPPORT	MOODY COLLEGE	1	ATLANTIC	7/73- 8/77	4
292	VHF CLIPPER	SUPPORT	MOODY COLLEGE	3	ATLANTIC	6/73- 8/77	342
666	MOTOROLA	WAVE PROP	MOTOROLA	6	U.S.	7/77- 9/78	47
231	VHF MSFN PROP	WAVE PROP	MSFN NETWORK	3	W. HEMIS.	9/70- 2/71	22
671	MSH	MEDICAL	MTN STS HTH COR	6	ROCKY MTNS	3/75- 5/75	22
605	PLACE	DATA TRANS	NASA	6	U.S.	9/74- 6/75	967
639	ALL DEMO	DEMO	NASA	6	U.S.	6/74- 7/79	322
605	PLACE	RANGING	NASA	6	U.S.	9/74- 6/75	967
108	LAUNCH SUPPORT	SUPPORT	NASA	1	U.S.	1/67- 1/76	930
108	LAUNCH SUPPORT	SUPPORT	NASA	3	U.S.	1/67- 8/76	369
108	LAUNCH SUPPORT	SUPPORT	NASA	5	U.S.	3/67-10/72	69
108	LAUNCH SUPPORT	SUPPORT	NASA	6	U.S.	7/77- 2/78	7
202	S/C SUPPORT	SUPPORT	NASA	1	W. HEMIS.	4/69- 70	270
CTS-18	INTRANASA COMM	CONFERENCE	NASA/ARC	CTS	U.S.	5/76- OPEN	382
CTS-18	INTRANASA COMM	CONFERENCE	NASA/GSFC	CTS	U.S.	5/76- OPEN	382
620	GEOS-C	DATA TRANS	NASA/GSFC	6	WORLD	9/74- 7/79	894
617	TDRE	DATA TRANS	NASA/GSFC	6	WORLD	9/74- 7/79	622
618	TRUST	DATA TRANS	NASA/GSFC	6	U.S.	9/74- 7/75	40
311	GSFC	DEMO	NASA/GSFC	3	U.S.(EAST)	7/76- OPEN	1705
CTS-20	ADV GRD REC EQ	GRD TERM	NASA/GSFC	CTS	U.S.	4/76- 4/78	87
602	VHRR RADIOMETER	METEOR.	NASA/GSFC	6	U.S.	6/74- 9/74	360
620	GEOS-C	SAT CONTRL	NASA/GSFC	6	WORLD	9/74- 7/79	894
607	IMDRAS	SAT CONTRL	NASA/GSFC	6	U.S.	6/74- 7/75	5
610	INTERFEROMETER	SAT CONTRL	NASA/GSFC	6	U.S.	6/74-11/78	104
604	SAPPSAC	SAT CONTRL	NASA/GSFC	6	U.S.	6/74- 1/75	72
617	TDRE	SAT CONTRL	NASA/GSFC	6	WORLD	9/74- 7/79	622
631	ENV MEAS EXP	SCIENTIFIC	NASA/GSFC	6	U.S.	6/74- 7/77	50
649	MAG FIELD STUDY	SCIENTIFIC	NASA/GSFC	6	U.S.	4/75- 6/75	295
CTS-01	COMM LINK CHAR	WAVE PROP	NASA/GSFC	CTS	U.S.	2/76-12/77	315
244	MMW REG 1	WAVE PROP	NASA/GSFC	5	N. AMERICA	8/69- 9/71	1866
245	MMW REG 2	WAVE PROP	NASA/GSFC	5	N. AMERICA	8/69- 9/71	326
609	MMW	WAVE PROP	NASA/GSFC	6	U.S.	6/74- 7/79	3271
601	RADIO FREQ INT.	WAVE PROP	NASA/GSFC	6	U.S.	6/74-12/76	877
603	RAD ASTRO INTER	WAVE PROP	NASA/GSFC	6	WORLD	6/74- 6/75	9
640	APOLLO-SOYUZ	SUPPORT	NASA/HOUSTON	6	WORLD	10/74- 7/75	333
CTS-18	INTRANASA COMM	CONFERENCE	NASA/LERC	CTS	U.S.	5/76- OPEN	382
CTS-24	OICE	DATA TRANS	NASA/LERC	CTS	U.S.(EAST)	6/77- OPEN	131
CTS-22	ICE FLOW	DATA TRANS	NASA/LERC	CTS	ALASKA	8/76- 9/76	70
CTS-T	TEP/SHF	GRD TERM	NASA/LERC	CTS	OHIO	2/76- OPEN	839
230	VHF B/ION	SUPPORT	NASA/WALLOPS	3	W. HEMIS.	3/71- 9/71	176
238	VHF NBS	TIME/FREQ	NAT BUR OF STDS	3	W. HEMIS.	8/71- 8/72	327
227	MET ALASKA	EDUCATION	NAT EDUC ASSOC	1	W. HEMIS.	6/69- OPEN	11314
302	NEA	EDUCATION	NAT EDUC ASSOC	1	APPAL/ALASK	1/76- 4/77	39

• ATS SCHEDULED TIME/CTS ACTUAL TIME

3.4 Sorted by Experimenter (cont.)

ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS *
302	NEA	EDUCATION	NAT EDUC ASSOC	3	APPAL/ALASK	1/76- 4/77	76
316	NSTL	MEDICAL	NAT SP TECH LAB	3	U.S.(SOUTH)	10/76-10/76	71
CTS-27	WOMENS SAT SER	CONFERENCE	NAT WOMENS AG	CTS	U.S.	PENDING	0
343	ORANGE	SUPPORT	NAT. SC. FOUND.	3	ANTARCTICA	7/78- 8/78	176
666	UHF/NRL	SCIENTIFIC	NAVAL RES LAB	6	U.S.	9/77- 5/78	18
609	MMW	WAVE PROP	NAVAL RES LAB	6	MARYLAND	6/74- 7/79	3271
226	VHF NETHERLAND	MARITIME	NETHERLANDS	3	ATLANTIC	8/70-12/71	265
295	VHF NIAID	MEDICAL	NIAID	1	PACIFIC	10/73- OPEN	237
210	MSSCC	DATA TRANS	NOAA	1	WORLD	3/69- 6/72	7
210	MSSCC	DATA TRANS	NOAA	3	WORLD	3/69- OPEN	26966
205	SSCC	DATA TRANS	NOAA	1	WORLD	3/69- OPEN	8372
205	SSCC	DATA TRANS	NOAA	3	WORLD	3/69- OPEN	20
183	WEFAX	DATA TRANS	NOAA	1	WORLD	3/69- OPEN	5957
183	WEFAX	DATA TRANS	NOAA	3	WORLD	3/69- OPEN	3943
211	IDCS	METEOR.	NOAA	3	U.S.	11/67-10/72	1050
210	MSSCC	METEOR.	NOAA	1	WORLD	3/69- 6/72	7
210	MSSCC	METEOR.	NOAA	3	WORLD	3/69- OPEN	26966
205	SSCC	METEOR.	NOAA	1	WORLD	3/69- OPEN	8372
205	SSCC	METEOR.	NOAA	3	WORLD	3/69- OPEN	20
183	WEFAX	METEOR.	NOAA	1	WORLD	3/69- OPEN	5957
183	WEFAX	METEOR.	NOAA	3	WORLD	3/69- OPEN	3943
211	IDCS	SAT PHOTOS	NOAA	3	U.S.	11/67-10/72	1050
301	VHF GATE	SUPPORT	NOAA	3	UNKNOWN	1/74- 9/74	388
606	RADIO BEACON	WAVE PROP	NOAA	6	U.S.	6/74- 7/79	0
606	RADIO BEACON	WAVE PROP	NOAA	6	EUROPE	6/74- 7/79	0
233	VHF NORWAY	METEOR.	NORWAY	3	N. ATLANTIC	11/70- 2/71	22
233	VHF NORWAY	RANGING	NORWAY	3	N. ATLANTIC	11/70- 2/71	22
CTS-01	COMM LINK CHAR	WAVE PROP	OHIO STATE U	CTS	OHIO	2/76-12/77	315
609	MMW	WAVE PROP	OHIO STATE U.	6	OHIO	6/74- 7/79	3271
235	VHF HAWAII	EDUCATION	PEACESAT	1	PACIFIC	2/72- OPEN	6942
235	VHF HAWAII	MEDICAL	PEACESAT	1	PACIFIC	2/72- OPEN	6942
331	PLU	BROADCAST	PROJECT LOOK-UP	3	PUERTO RICO	1/76- OPEN	87
660	PLU	BROADCAST	PROJECT LOOK-UP	6	SO.AMERICA	1/76- 7/79	141
331	PLU	EDUCATION	PROJECT LOOK-UP	3	PUERTO RICO	1/76- OPEN	87
660	PLU	EDUCATION	PROJECT LOOK-UP	6	SO.AMERICA	1/76- 7/79	141
661	ALFE	BROADCAST	PSSC	6	ALASKA	9/77-10/78	1979
672	SAMFE	BROADCAST	PSSC	6	SAMOA	9/77- 2/78	444
340	SAMOA TV SAMFE	BROADCAST	PSSC	1	SAMOA	9/77- OPEN	53
340	SAMOA TV SAMFE	BROADCAST	PSSC	3	SAMOA	9/77- OPEN	96
661	ALFE	DATA TRANS	PSSC	6	ALASKA	9/77-10/78	1979
CTS-21	PSSC	DEMO	PSSC	CTS	U.S.	2/77- OPEN	284
667	ALVA	EDUCATION	PSSC	6	ALASKA	9/77- 7/79	69
667	ALVA	EDUCATION	PSSC	6	U.S.(WEST)	9/77- 7/79	69
667	ALVA	MEDICAL	PSSC	6	ALASKA	9/77- 7/79	69
667	ALVA	MEDICAL	PSSC	6	U.S.(WEST)	9/77- 7/79	69
CTS-21	PSSC	SUPPORT	PSSC	CTS	U.S.	2/77- OPEN	284
258	SHF SEARCH	LAW ENFORC	PUBLIC SYST INC	1	U.S.	12/71-12/71	68
253	SHF VLBI	TIME/FREQ	RADIO RES LABS	1	JAPAN	1/77- 2/77	5
253	SHF VLBI	TIME/FREQ	RADIO RES LABS	3	JAPAN	1/77- 2/77	190
304	VHF OPN	TIME/FREQ	RADIO RES LABS	1	JAPAN	67- OPEN	158
612	MET(ARC)	EDUCATION	ROCKY MTN STS	6	ROCKY MTNS	6/74- 6/75	1741
CTS-09	SALINET	EDUCATION	SALINET	CTS	U.S.	10/77- 4/78	10
284	VHF HIGH NOTE	RANGING	SANDIA/AEC	1	U.S.	3/71- 6/72	5
284	VHF HIGH NOTE	RANGING	SANDIA/AEC	3	U.S.	3/71- 6/72	5
CTS-26	PROJ ADJUNCT	CONFERENCE	SAT BUS SYSTEMS	CTS	VIRGINIA	9/77- 2/78	178

* ATS SCHEDULED TIME/CTS ACTUAL TIME

3.4 Sorted by Experimenter (cont.)

ID#	EXP. NAME	CAT.	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS *
CTS-26	PROJ ADJUNCT	DATA TRANS	SAT BUS SYSTEMS	CTS	VIRGINIA	9/77- 2/78	178
CTS-19	SAT. DIST.	DATA TRANS	SECA	CTS	U.S.(SOUTH)	12/76- OPEN	655
287	VHF SEEK	METEOR.	SIERRA RES CORP	3	U.S.	1/72-12/72	9
253	SHF VLBI	TIME/FREQ	SMITHSONIAN INS	1	U.S.	5/71-10/72	2
253	SHF VLBI	TIME/FREQ	SMITHSONIAN INS	3	U.S.	5/71-10/72	190
253	SHF VLBI	TIME/FREQ	SMITHSONIAN INS	5	U.S.	5/71-10/72	0
316	NSTL	MEDICAL	SO REG MED CONS	3	U.S.(SOUTH)	10/76-10/76	71
CTS-04	COLLEGE CURR	EDUCATION	STANFORD UNIV	CTS	U.S./CANADA	2/76- OPEN	446
236	VHF BRAZIL	EDUCATION	STANFORD UNIV	3	W. HEMIS.	2/70- OPEN	38
285	VHF STANFORD	EDUCATION	STANFORD UNIV	1	U.S.(WEST)	5/71- 6/72	2
285	VHF STANFORD	EDUCATION	STANFORD UNIV	3	U.S.(WEST)	5/71- 6/72	139
324	SIPLE	SUPPORT	STANFORD UNIV	3	W. HEMIS.	2/77- OPEN	1166
227	NET ALASKA	EDUCATION	ST. OF ALASKA	1	ALASKA	6/69- OPEN	11314
612	NET(ARC)	EDUCATION	ST. OF ALASKA	6	ALASKA	6/74- 6/75	1741
227	NET ALASKA	MEDICAL	ST. OF ALASKA	1	ALASKA	6/69- OPEN	11314
330	MONTANA	SUPPORT	ST. OF MONTANA	3	MONTANA	6/77-11/77	163
263	TELESAT	WAVE PROP	TELESAT CANADA	1	CANADA	9/72- 9/72	136
325	BYRE	SUPPORT	TEXAS A&M	3	W. HEMIS.	4/77-10/78	315
309	NSF	SUPPORT	TEXAS A&M	3	ATLANTIC	3/76- 9/76	161
292	VHF CLIPPER	SUPPORT	TEXAS A&M	3	ATLANTIC	6/73- 8/77	342
306	VHF DRAKE	SUPPORT	TEXAS A&M	3	ANTARCTICA	1/75- OPEN	428
283	VHF UCLA	EDUCATION	TRW	3	U.S.(WEST)	9/71-10/71	15
283	VHF UCLA	EDUCATION	UCLA	3	U.S.(WEST)	9/71-10/71	15
650	MAG DATA	SCIENTIFIC	UCLA	6	U.S.	5/75- 8/76	907
225	VHF ENGLAND	MARITIME	UNITED KINDGOM	3	ATLANTIC	8/70-12/70	191
CTS-28	VLBI	TIME/FREQ	UNIV OF ILL	CTS	U.S./CANADA	5/78-12/78	120
247	ALPHA-2	ROBOING	USAF/SAMSO	5	ATLANTIC	7/70- 2/71	88
239	VHF VANGUARD	CONFERENCE	USCG	1	ATLANTIC	6/68- 7/69	12
239	VHF VANGUARD	CONFERENCE	USCG	3	ATLANTIC	6/68-10/74	28
265	VANGUARD	DATA TRANS	USCG	3	ATLANTIC	3/72- 4/73	98
265	VANGUARD	DATA TRANS	USCG	3	PACIFIC	3/72- 4/73	98
239	VHF VANGUARD	DATA TRANS	USCG	1	ATLANTIC	6/68- 7/69	12
239	VHF VANGUARD	DATA TRANS	USCG	3	ATLANTIC	6/68-10/74	28
265	VANGUARD	RANGING	USCG	5	ATLANTIC	3/72- 4/73	232
265	VANGUARD	RANGING	USCG	5	PACIFIC	3/72- 4/73	232
290	VHF BERING SEA	SUPPORT	US/USSR	1	BERING SEA	12/72- 3/73	43
CTS-13	DECENT MED ED	EDUCATION	U OF WASHINGTON	CTS	ALASKA/WASH	3/77- OPEN	292
CTS-31	3 WAY TIME TRAN	TIME/FREQ	U.S. NAVAL OBS.	CTS	U.S./CANADA	1/79- 7/79	0
329	NORPAX	SUPPORT	U. OF CAL/NAVY	1	N. PACIFIC	5/77- 6/77	53
CTS-35	CT SCANNING NET	MEDICAL	U. OF COLORADO	CTS	U.S.(WEST)	4/79- 7/79	0
305	VHF ALOHA	COMPUTER	U. OF HAWAII	1	PACIFIC	72- OPEN	1167
307	VHF OCEAN	SUPPORT	U. OF MIAMI	3	ATLANTIC	12/77- OPEN	2241
623	L-BAND EXP	WAVE PROP	U. OF PA	6	U.S.(EAST)	8/76- 1/77	787
332	ENDEAVOR	SUPPORT	U. OF RHODE ISL	3	ATLANTIC	7/77- 1/78	168
CTS-01	COMM LINK CHAR	WAVE PROP	U. OF TEXAS	CTS	TEXAS	2/76-12/77	315
609	MMW	WAVE PROP	U. OF TEXAS	6	TEXAS	6/74- 7/79	3271
320	SAMOA	EDUCATION	U. SO. PACIFIC	1	SAMOA	1/77- OPEN	258
297	VHF USP/FIJI	EDUCATION	U. SO. PACIFIC	1	PACIFIC	1/74- OPEN	2667
CTS-29	UNIV GRAD STUDY	EDUCATION	VARIAN ASSOC	CTS	U.S.	5/78-12/78	49
CTS-11	HEALTH/COMMUN	EDUCATION	VETERANS ADM	CTS	U.S.(WEST)	6/77- OPEN	306
612	NET(ARC)	EDUCATION	VETERANS ADM	6	APPALACHIA	6/74- 6/75	1741
CTS-11	HEALTH/COMMUN	MEDICAL	VETERANS ADM	CTS	U.S.(WEST)	6/77- OPEN	306
612	NET(ARC)	MEDICAL	VETERANS ADM	6	APPALACHIA	6/74- 6/75	1741
CTS-01	COMM LINK CHAR	WAVE PROP	VIRGINIA POLY	CTS	VIRGINIA	2/76-12/77	315
609	MMW	WAVE PROP	VIRGINIA POLY	6	VIRGINIA	6/74- 7/79	3271

* ATS SCHEDULED TIME/CTS ACTUAL TIME

3.4 Sorted by Experimenter (cont.)

ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS *
CTS-13	DECENT MED ED	EDUCATION	WAMI	CTS	ALASKA/WASH	3/77- OPEN	292
612	MET(ARC)	EDUCATION	WAMI	6	ALASKA/WASH	6/74- 6/75	1741
CTS-13	DECENT MED ED	MEDICAL	WAMI	CTS	ALASKA/WASH	3/77- OPEN	292
612	MET(ARC)	MEDICAL	WAMI	6	ALASKA/WASH	6/74- 6/75	1741
CTS-15	TELECONFERENCE	CONFERENCE	WESTINGHOUSE	CTS	U.S.(EAST)	2/76- OPEN	286
250	L-BAND RANGING	RANGING	WESTINGHOUSE	1	U.S.(WEST)	2/71- 5/71	6
250	L-BAND RANGING	RANGING	WESTINGHOUSE	3	U.S.(WEST)	2/71- 5/71	0
250	L-BAND RANGING	RANGING	WESTINGHOUSE	5	U.S.(WEST)	2/71- 5/71	99
246	SSRA	RANGING	WESTINGHOUSE	5	U.S.(WEST)	4/71- 5/71	1
609	MMW	WAVE PROP	WESTINGHOUSE	6	MARYLAND	6/74- 7/79	3271
322	WHOI	SUPPORT	WOODS HOLE INST	3	PACIFIC	1/77- 2/77	244

* ATS SCHEDULED TIME/CTS ACTUAL TIME

3.5 Sorted by Satellite

ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS •
CTS-12	AESP II	EDUCATION	APP. RES. COMM.	CTS	APPALACHIA	PENDING	0
CTS-16	PROJ INTERCHG	EDUCATION	ARCH OF S.F.	CTS	CALIFORNIA	3/76- 6/78	85
CTS-17	HEALTH ED TV	EDUCATION	ASSOC OF U HOSP	CTS	ROCKY MTNS	PENDING	0
CTS-17	HEALTH ED TV	MEDICAL	ASSOC OF U HOSP	CTS	ROCKY MTNS	PENDING	0
CTS-04	COLLEGE CURR	EDUCATION	CARLETON UNIV	CTS	U.S./CANADA	2/76- OPEN	446
CTS-24	DICE	DATA TRANS	COMSAT LABS	CTS	U.S.(EAST)	5/76- OPEN	131
CTS-06	TET/COMSAT	GRD TERM	COMSAT LABS	CTS	U.S.(EAST)	2/76- OPEN	266
CTS-30	TER OF TOMORROW	GRD TERM	FCC	CTS	U.S.	3/78-12/78	56
CTS-25	CONGRESS	CONFERENCE	GEO WASH UNIV	CTS	MARYLAND	4/77- 8/78	39
CTS-33	WIDE BAND COMM.	CONFERENCE	GTE LABS	CTS	U.S.	1/79- OPEN	6
CTS-07	BIOMED COMMUN	EDUCATION	LISTER HILL	CTS	U.S.	6/77- OPEN	404
CTS-07	BIOMED COMMUN	MEDICAL	LISTER HILL	CTS	U.S.	6/77- OPEN	404
CTS-18	INTRANASA COMM	CONFERENCE	NASA/ARC	CTS	U.S.	5/76- OPEN	382
CTS-18	INTRANASA COMM	CONFERENCE	NASA/GSFC	CTS	U.S.	5/76- OPEN	382
CTS-20	ADV GRD REC EQ	GRD TERM	NASA/GSFC	CTS	U.S.	4/76- 4/78	87
CTS-01	COMM LINK CHAR	WAVE PROP	NASA/GSFC	CTS	U.S.	2/76-12/77	315
CTS-18	INTRANASA COMM	CONFERENCE	NASA/LERC	CTS	U.S.	5/76- OPEN	382
CTS-24	DICE	DATA TRANS	NASA/LERC	CTS	U.S.(EAST)	6/77- OPEN	131
CTS-22	ICE FLOW	DATA TRANS	NASA/LERC	CTS	ALASKA	8/76- 9/76	70
CTS-T	TEP/SHF	GRD TERM	NASA/LERC	CTS	OHIO	2/76- OPEN	839
CTS-27	WOMENS SAT SER	CONFERENCE	NAT WOMENS AS	CTS	U.S.	PENDING	0
CTS-01	COMM LINK CHAR	WAVE PROP	OHIO STATE U	CTS	OHIO	2/76-12/77	315
CTS-21	PSSC	DEMO	PSSC	CTS	U.S.	2/77- OPEN	284
CTS-21	PSSC	SUPPORT	PSSC	CTS	U.S.	2/77- OPEN	284
CTS-09	SALINET	EDUCATION	SALINET	CTS	U.S.	10/77- 4/78	10
CTS-26	PROJ ADJUNCT	CONFERENCE	SAT BUS SYSTEMS	CTS	VIRGINIA	9/77- 2/78	178
CTS-26	PROJ ADJUNCT	DATA TRANS	SAT BUS SYSTEMS	CTS	VIRGINIA	9/77- 2/78	178
CTS-19	SAT. DIST.	DATA TRANS	SECA	CTS	U.S.(SOUTH)	12/76- OPEN	655
CTS-04	COLLEGE CURR	EDUCATION	STANFORD UNIV	CTS	U.S./CANADA	2/76- OPEN	446
CTS-28	VLBI	TIME/FREQ	UNIV OF ILL	CTS	U.S./CANADA	5/78-12/78	120
CTS-13	DECENT MED ED	EDUCATION	U OF WASHINGTON	CTS	ALASKA/WASH	3/77- OPEN	292
CTS-31	3 WAY TIME TRAN	TIME/FREQ	U.S. NAVAL OBS.	CTS	U.S./CANADA	1/79- 7/79	0
CTS-35	CT SCANNING NET	MEDICAL	U. OF COLORADO	CTS	U.S.(WEST)	4/79- 7/79	0
CTS-01	COMM LINK CHAR	WAVE PROP	U. OF TEXAS	CTS	TEXAS	2/76-12/77	315
CTS-29	UNIV GRAD STUDY	EDUCATION	VARIAN ASSOC	CTS	U.S.	5/78-12/78	49
CTS-11	HEALTH/COMMUN	EDUCATION	VETERANS ADM	CTS	U.S.(WEST)	6/77- OPEN	306
CTS-11	HEALTH/COMMUN	MEDICAL	VETERANS ADM	CTS	U.S.(WEST)	6/77- OPEN	306
CTS-01	COMM LINK CHAR	WAVE PROP	VIRGINIA POLY	CTS	VIRGINIA	2/76-12/77	315
CTS-13	DECENT MED ED	EDUCATION	WAMI	CTS	ALASKA/WASH	3/77- OPEN	292
CTS-13	DECENT MED ED	MEDICAL	WAMI	CTS	ALASKA/WASH	3/77- OPEN	292
CTS-15	TELECONFERENCE	CONFERENCE	WESTINGHOUSE	CTS	U.S.(EAST)	2/76- OPEN	286
291	VHF ZURITA	SUPPORT	AEC	1	ALASKA/HAW.	6/73-12/73	62
312	ALC	CONFERENCE	AMER LUTHERAN C	1	U.S.	6/76- OPEN	219
185	VHF A/C	A/C COMM	ARINC	1	U.S.	1/67- 6/70	264
257	SHF CRC	WAVE PROP	CANADA/CRC	1	CANADA	1/71-12/71	76
338	DISP	CONFERENCE	DEPT OF INTER	1	PACIFIC	12/77- OPEN	1453
318	DRI	DATA TRANS	DESERT RES INST	1	ANTARCTICA	12/76- 1/77	10
318	DRI	METEOR.	DESERT RES INST	1	ANTARCTICA	12/76- 1/77	10
102	DATA XMISSION	MEDICAL	DUKE U. MED CEN	1	U.S.(EAST)	11/71-11/71	54
281	LOS ALAMOS	A/C COMM	EG&G	1	W. HEMIS.	10/70-10/71	265
232	VHF EG&G	A/C COMM	EG&G	1	W. HEMIS.	6/68-10/72	48
232	[illegible] EG&G	SUPPORT	EG&G	1	W. HEMIS.	6/68-10/72	48
315	ERDA	DATA TRANS	ERDA	1	PACIFIC	1/78- 1/79	146
315	ERDA	SUPPORT	ERDA	1	PACIFIC	1/78- 1/79	146
336	ERDA/DOD	SUPPORT	ERDA	1	ENEWETAK	10/77- 9/78	49

• ATS SCHEDULED TIME/CTS ACTUAL TIME

3.5 Sorted by Satellite (cont.)

ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS *
288	GE/MARAD	DATA TRANS	GE	1	ATLANTIC	4/72- 5/72	7
228	VHF GE	DATA TRANS	GE	1	BERMUDA	2/69- 8/71	41
288	GE/MARAD	MARITIME	GE	1	ATLANTIC	4/72- 5/72	7
228	VHF GE	MARITIME	GE	1	BERMUDA	2/69- 8/71	41
261	GE L-BAND	RANGING	GE	1	N. AMERICA	6/70-10/72	1
234	GE/FAA	RANGING	GE	1	N. ATLANTIC	11/69- 6/71	4
288	GE/MARAD	RANGING	GE	1	ATLANTIC	4/72- 5/72	7
266	L-BAND TRILAT	RANGING	GE	1	U.S.	1/74- 1/76	19
228	VHF GE	RANGING	GE	1	BERMUDA	2/69- 8/71	41
107	SPEC SHF	SUPPORT	GE	1	W. HEMIS.	68- 70	1929
293	GE/EXXON	DATA TRANS	GE & EXXON	1	ATLANTIC	7/73- 2/74	90
293	GE/EXXON	MARITIME	GE & EXXON	1	ATLANTIC	7/73- 2/74	90
293	GE/EXXON	RANGING	GE & EXXON	1	ATLANTIC	7/73- 2/74	90
294	SP HET	SUPPORT	HET	1	U.S.	1/73- 8/77	1654
300	VHF IHCHIS	MEDICAL	IHCHIS	1	ALASKA	5/74- 5/74	2
282	VHF NLM	COMPUTER	LISTER HILL	1	U.S.(N.W.)	10/71- OPEN	619
282	VHF NLM	MEDICAL	LISTER HILL	1	U.S.(N.W.)	10/71- OPEN	619
292	VHF CLIPPER	SUPPORT	MOODY COLLEGE	1	ATLANTIC	7/73- 8/77	4
108	LAUNCH SUPPORT	SUPPORT	NASA	1	U.S.	1/67- 1/76	930
202	S/C SUPPORT	SUPPORT	NASA	1	W. HEMIS.	4/69- 70	270
227	HET ALASKA	EDUCATION	NAT EDUC ASSOC	1	W. HEMIS.	6/69- OPEN	11314
302	NEA	EDUCATION	NAT EDUC ASSOC	1	APPAL/ALASK	1/76- 4/77	39
295	VHF NIAID	MEDICAL	NIAID	1	PACIFIC	10/73- OPEN	237
210	MSSCC	DATA TRANS	NOAA	1	WORLD	3/69- 6/72	7
205	SSCC	DATA TRANS	NOAA	1	WORLD	3/69- OPEN	8372
183	WEFAX	DATA TRANS	NOAA	1	WORLD	3/69- OPEN	5957
210	MSSCC	METEOR.	NOAA	1	WORLD	3/69- 6/72	7
205	SSCC	METEOR.	NOAA	1	WORLD	3/69- OPEN	8372
183	WEFAX	METEOR.	NOAA	1	WORLD	3/69- OPEN	5957
235	VHF HAWAII	EDUCATION	PEACESAT	1	PACIFIC	2/72- OPEN	6942
235	VHF HAWAII	MEDICAL	PEACESAT	1	PACIFIC	2/72- OPEN	6942
340	SAMOA TV SAMFE	BROADCAST	PSSC	1	SAMOA	9/77- OPEN	53
258	SHF SEARCH	LAW ENFORC	PUBLIC SYST INC	1	U.S.	12/71-12/71	68
253	SHF VLBI	TIME/FREQ	RADIO RES LABS	1	JAPAN	1/77- 2/77	5
304	VHF OPN	TIME/FREQ	RADIO RES LABS	1	JAPAN	67- OPEN	158
284	VHF HIGH NOTE	RANGING	SANDIA/AEC	1	U.S.	3/71- 6/72	5
253	SHF VLBI	TIME/FREQ	SMITHSONIAN INS	1	U.S.	5/71-10/72	2
285	VHF STANFORD	EDUCATION	STANFORD UNIV	1	U.S.(WEST)	5/71- 6/72	2
227	HET ALASKA	EDUCATION	ST. OF ALASKA	1	ALASKA	6/69- OPEN	11314
227	HET ALASKA	MEDICAL	ST. OF ALASKA	1	ALASKA	6/69- OPEN	11314
263	TELESAT	WAVE PROP	TELESAT CANADA	1	CANADA	9/72- 9/72	136
239	VHF VANGUARD	CONFERENCE	USCG	1	ATLANTIC	6/68- 7/69	12
239	VHF VANGUARD	DATA TRANS	USCG	1	ATLANTIC	6/68- 7/69	12
290	VHF BERING SEA	SUPPORT	US/USSR	1	BERING SEA	12/72- 3/73	43
329	NORPAX	SUPPORT	U. OF CAL/NAVY	1	N. PACIFIC	5/77- 6/77	53
305	VHF ALOHA	COMPUTER	U. OF HAWAII	1	PACIFIC	72- OPEN	1167
320	SAMOA	EDUCATION	U. SO. PACIFIC	1	SAMOA	1/77- OPEN	258
297	VHF USP/FIJI	EDUCATION	U. SO. PACIFIC	1	PACIFIC	1/74- OPEN	2667
250	L-BAND RANGING	RANGING	WESTINGHOUSE	1	U.S.(WEST)	2/71- 5/71	6
342	PERU	SUPPORT	ADVENTURES UNL.	3	PERU	6/78- 7/78	46
264	MARAD/AII/PLACE	DATA TRANS	AII	3	WORLD	1/73- OPEN	131
264	MARAD/AII/PLACE	MARITIME	AII	3	WORLD	1/73- OPEN	131
286	HET(ARC)	EDUCATION	APP. REG. COMM.	3	APPALACHIA	6/74- OPEN	536
185	VHF A/C	A/C COMM	ARINC	3	U.S.	1/67- 6/70	308
319	SIRIUS	RANGING	BAKER DEV CORP.	3	BERMUDA	12/76- 1/77	40

* ATS SCHEDULED TIME/CTS ACTUAL TIME

3.5 Sorted by Satellite (cont.)

ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS *
335	VHF SAR SIM	RANGING	BAKER DEV CORP	3	BERMUDA	6/77- 9/77	15
319	SIRIUS	SUPPORT	BAKER DEV CORP	3	BERMUDA	12/76- 1/77	40
251	L-BAND DOT	DATA TRANS	BOEING	3	N. AMERICA	4/74-10/76	128
289	VHF CALYPSO	DATA TRANS	COUSTEAU GROUP	3	ANTARCTICA	6/72- 1/76	358
289	VHF CALYPSO	SUPPORT	COUSTEAU GROUP	3	ANTARCTICA	6/72- 1/76	358
321	FLTAC	CONFERENCE	DEPT OF NAVY	3	W. HEMIS.	1/77- OPEN	391
333	U. OF W. INDIES	EDUCATION	DEPT OF ST/AID	3	JAMAICA	1/78- 6/78	223
344	BARBADOS	MEDICAL	DEPT OF ST/AID	3	BARBADOS	8/78- 9/78	14
316	DRI	DATA TRANS	DESERT RES INST	3	ANTARCTICA	12/76- 1/77	627
318	DRI	METEOR.	DESERT RES INST	3	ANTARCTICA	12/76- 1/77	627
310	VHF DEA	CONFERENCE	DRUG ENF AGY	3	U.S.	4/76- OPEN	131
310	VHF DEA	RANGING	DRUG ENF AGY	3	U.S.	4/76- OPEN	131
315	ERDA	DATA TRANS	ERDA	3	PACIFIC	7/76- 8/76	5
315	ERDA	SUPPORT	ERDA	3	PACIFIC	7/76- 8/76	5
310	VHF DEA	CONFERENCE	GE	3	U.S.	4/76- OPEN	131
288	GE/MARAD	DATA TRANS	GE	3	ATLANTIC	4/72- 5/72	46
228	VHF GE	DATA TRANS	GE	3	BERMUDA	2/69- 8/71	142
288	GE/MARAD	MARITIME	GE	3	ATLANTIC	4/72- 5/72	46
228	VHF GE	MARITIME	GE	3	BERMUDA	2/69- 8/71	142
261	GE L-BAND	RANGING	GE	3	N. AMERICA	6/70-10/72	51
234	GE/FAA	RANGING	GE	3	N. ATLANTIC	11/69- 6/71	44
288	GE/MARAD	RANGING	GE	3	ATLANTIC	4/72- 5/72	46
268	L-BAND TRILAT	RANGING	GE	3	U.S.	1/74- 1/76	98
310	VHF DEA	RANGING	GE	3	U.S.	4/76- OPEN	131
228	VHF GE	RANGING	GE	3	BERMUDA	2/69- 8/71	142
107	SPEC SHF	SUPPORT	GE	3	W. HEMIS.	68- 70	1613
293	GE/EXXON	DATA TRANS	GE & EXXON	3	ATLANTIC	7/73- 2/74	186
293	GE/EXXON	MARITIME	GE & EXXON	3	ATLANTIC	7/73- 2/74	186
293	GE/EXXON	RANGING	GE & EXXON	3	ATLANTIC	7/73- 2/74	186
294	SP MET	SUPPORT	MET	3	U.S.	1/73- 8/77	1918
317	LAMONT	SUPPORT	LAMONT/DOHERTY	3	SO. OCEAN	10/76- 3/77	161
230	VHF B/ION	SUPPORT	MAX PLANCK INST	3	W. HEMIS.	3/71- 9/71	176
292	VHF CLIPPER	SUPPORT	MOODY COLLEGE	3	ATLANTIC	6/ - 8/77	342
231	VHF MSFN PROP	WAVE PROP	MSFN NETWORK	3	W. HEMIS.	9/7 - 2/71	22
108	LAUNCH SUPPORT	SUPPORT	NASA	3	U.S.	1/67- 8/76	369
311	GSFC	DEMO	NASA/GSFC	3	U.S.(EAST)	7/76- OPEN	1705
230	VHF B/ION	SUPPORT	NASA/WALLOPS	3	W. HEMIS.	3/71- 9/71	176
238	VHF NBS	TIME/FREQ	NAT BUR OF STDS	3	W. HEMIS.	8/71- 8/72	327
302	NEA	EDUCATION	NAT EDUC ASSOC	3	APPAL/ALASK	1/76- 4/77	76
316	NSTL	MEDICAL	NAT SP TECH LAB	3	U.S.(SOUTH)	10/76-10/76	71
343	ORANGE	SUPPORT	NAT. SC. FOUND.	3	ANTARCTICA	7/78- 8/78	176
226	VHF NETHERLAND	MARITIME	NETHERLANDS	3	ATLANTIC	8/70-12/71	265
210	NSSCC	DATA TRANS	NOAA	3	WORLD	3/69- OPEN	26966
205	SSCC	DATA TRANS	NOAA	3	WORLD	3/69- OPEN	20
183	WEFAX	DATA TRANS	NOAA	3	WORLD	3/69- OPEN	3943
211	IDCS	METEOR.	NOAA	3	U.S.	11/67-10/72	1050
210	NSSCC	METEOR.	NOAA	3	WORLD	3/69- OPEN	26966
205	SSCC	METEOR.	NOAA	3	WORLD	3/69- OPEN	20
183	WEFAX	METEOR.	NOAA	3	WORLD	3/69- OPEN	3943
211	IDCS	SAT PHOTOS	NOAA	3	U.S.	11/67-10/72	1050
301	VHF GATE	SUPPORT	NOAA	3	UNKNOWN	1/74- 9/74	388
233	VHF NORWAY	METEOR.	NORWAY	3	N. ATLANTIC	11/70- 2/71	22
233	VHF NORWAY	RANGING	NORWAY	3	N. ATLANTIC	11/70- 2/71	22
331	PLU	BROADCAST	PROJECT LOOK-UP	3	PUERTO RICO	1/76- OPEN	87
331	PLU	EDUCATION	PROJECT LOOK-UP	3	PUERTO RICO	1/76- OPEN	87

* ATS SCHEDULED TIME/CTS ACTUAL TIME

3.5 Sorted by Satellite (cont.)

ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS *
340	SAMOA TV SAMFE	BROADCAST	PSSC	1	SAMOA	9/77- OPEN	96
253	SHF VLBI	TIME/FREQ	RADIO RES LABS	3	JAPAN	1/77- 2/77	190
284	VHF HIGH NOTE	RANGING	SANDIA/AEC	3	U.S.	3/71- 6/72	5
287	VHF SEEK	METEOR.	SIERRA RES CORP	3	U.S.	1/72-12/72	9
253	SHF VLBI	TIME/FREQ	SMITHSONIAN INS	3	U.S.	5/71-10/72	190
316	NSTL	MEDICAL	SO REG MED CONS	3	U.S.(SOUTH)	10/76-10/76	71
236	VHF BRAZIL	EDUCATION	STANFORD UNIV	3	W. HEMIS.	2/70- OPEN	38
285	VHF STANFORD	EDUCATION	STANFORD UNIV	3	U.S.(WEST)	5/71- 6/72	139
324	SIPLE	SUPPORT	STANFORD UNIV	3	W. HEMIS.	2/77- OPEN	1166
330	MONTANA	SUPPORT	ST. OF MONTANA	3	MONTANA	6/77-11/77	163
325	GYRE	SUPPORT	TEXAS A&M	3	W. HEMIS.	4/77-10/78	315
309	NSF	SUPPORT	TEXAS A&M	3	ATLANTIC	3/76- 9/76	161
292	VHF CLIPPER	SUPPORT	TEXAS A&M	3	ATLANTIC	6/73- 8/77	342
306	VHF DRAKE	SUPPORT	TEXAS A&M	3	ANTARCTICA	1/75- OPEN	428
283	VHF UCLA	EDUCATION	TRW	3	U.S.(WEST)	9/71-10/71	15
283	VHF UCLA	EDUCATION	UCLA	3	U.S.(WEST)	9/71-10/71	15
225	VHF ENGLAND	MARITIME	UNITED KINDGOM	3	ATLANTIC	8/70-12/70	191
239	VHF VANGUARD	CONFERENCE	USCG	3	ATLANTIC	6/68-10/74	28
265	VANGUARD	DATA TRANS	USCG	3	ATLANTIC	3/72- 4/73	98
265	VANGUARD	DATA TRANS	USCG	3	PACIFIC	3/72- 4/73	98
239	VHF VANGUARD	DATA TRANS	USCG	3	ATLANTIC	6/68-10/74	28
307	VHF OCEAN	SUPPORT	U. OF MIAMI	3	ATLANTIC	12/77- OPEN	2241
332	ENDEAVOR	SUPPORT	U. OF RHODE ISL	3	ATLANTIC	7/77- 1/78	168
250	L-BAND RANGING	RANGING	WESTINGHOUSE	3	U.S.(WEST)	2/71- 5/71	0
322	WHOI	SUPPORT	WOODS HOLE INST	3	PACIFIC	1/77- 2/77	244
248	SP L-BAND	CONFERENCE	AII	5	U.S.	8/74- 4/75	135
249	MARAD	DATA TRANS	AII	5	W. HEMIS.	3/70-12/71	65
264	MARAD/AII/PLACE	DATA TRANS	AII	5	WORLD	1/73- OPEN	912
248	SP L-BAND	DATA TRANS	AII	5	U.S.	8/74- 4/75	135
249	MARAD	MARITIME	AII	5	W. HEMIS.	3/70-12/71	65
264	MARAD/AII/PLACE	MARITIME	AII	5	WORLD	1/73- OPEN	912
247	ALPHA-2	RANGING	AII	5	ATLANTIC	7/70- 2/71	88
249	MARAD	RANGING	AII	5	W. HEMIS.	3/70-12/71	65
264	MARAD/AII/PLACE	RANGING	AII	5	WORLD	1/73- OPEN	912
251	L-BAND DOT	RANGING	BOEING	5	N. AMERICA	2/71- 7/74	557
252	L-BAND FAA	RANGING	BOEING	5	N. AMERICA	4/71- 4/72	275
260	CRC C/L-BAND	WAVE PROP	CANADA	5	CANADA	9/71- 5/72	113
259	COMSAT C/L PROP	WAVE PROP	CONSAT LABS	5	W. HEMIS.	1/72- 4/72	37
252	L-BAND FAA	RANGING	FAA	5	N. AMERICA	4/71- 4/72	275
261	GE L-BAND	RANGING	GE	5	N. AMERICA	6/70- 6/73	152
268	L-BAND TRILAT	RANGING	GE	5	U.S.	1/74- 1/76	172
249	MARAD	DATA TRANS	MARAD	5	W. HEMIS.	3/70-12/71	65
249	MARAD	MARITIME	MARAD	5	W. HEMIS.	3/70-12/71	65
108	LAUNCH SUPPORT	SUPPORT	NASA	5	U.S.	3/67-10/72	69
244	MMW REG 1	WAVE PROP	NASA/GSFC	5	N. AMERICA	8/69- 9/71	1866
245	MMW REG. 2	WAVE PROP	NASA/GSFC	5	N. AMERICA	8/69- 9/71	326
253	SHF VLBI	TIME/FREQ	SMITHSONIAN INS	5	U.S.	5/71-10/72	0
247	ALPHA-2	RANGING	USAF/SAMSO	5	ATLANTIC	7/70- 2/71	88
265	VANGUARD	RANGING	USCG	5	ATLANTIC	3/72- 4/73	232
265	VANGUARD	RANGING	USCG	5	PACIFIC	3/72- 4/73	232
250	L-BAND RANGING	RANGING	WESTINGHOUSE	5	U.S.(WEST)	2/71- 5/71	99
246	SSRA	RANGING	WESTINGHOUSE	5	U.S.(WEST)	4/71- 5/71	1
612	HET(ARC)	EDUCATION	APP. REG. COMM.	6	APPALACHIA	6/74- 6/75	1741
673	NIE	EDUCATION	APP. REG. COMM.	6	APPALACHIA	1/78- 7/79	3
609	MMW	WAVE PROP	ARMY	6	NEW JERSEY	6/74- 7/79	3271

* ATS SCHEDULED TIME/CTS ACTUAL TIME

3.5 Sorted by Satellite (cont.)

ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS *
609	MMW	WAVE PROP	BATTELLE LAB	6	WASHINGTON	6/74- 7/79	3271
609	MMW	WAVE PROP	BELL LAB	6	NEW JERSEY	6/74- 7/79	3271
664	SAR L-BAND C/O	RANGING	BOEING	6	N. ATLANTIC	8/74- 4/75	13
657	CRC	RANGING	CANADA/CRC	6	CANADA	9/74- 8/77	138
638	COMSAT PROP IND	WAVE PROP	COMSAT LABS	6	EUROPE	3/76- 7/76	667
658	COMSAT PROP US	WAVE PROP	COMSAT LABS	6	U.S.(EAST)	6/74- 6/78	159
609	MMW	WAVE PROP	COMSAT LABS	6	VIRGINIA	6/74- 7/79	3271
663	U. OF W. INDIES	BROADCAST	DEPT OF ST/AID	6	WEST INDIES	10/78- 7/79	66
663	U. OF W. INDIES	EDUCATION	DEPT OF ST/AID	6	WEST INDIES	10/78- 7/79	66
608	PROPAGATION(E)	WAVE PROP	ESTEC	6	EUROPE	8/75-10/76	2263
664	SAR L-BAND C/O	RANGING	FAA	6	N. ATLANTIC	8/74- 4/75	13
674	GE L-BAND	RANGING	GE	6	U.S.(EAST)	12/77- 7/79	573
674	GE L-BAND	SUPPORT	GE	6	U.S.(EAST)	12/77- 7/79	573
677	IHS	COMPUTER	INDIAN HLTH SER	6	ALASKA	9/78- 7/79	0
677	IHS	CONFERENCE	INDIAN HLTH SER	6	ALASKA	9/78- 7/79	0
612	HET(ARC)	MEDICAL	INDIAN HLTH SER	6	ALASKA	6/74- 6/75	1741
677	IHS	MEDICAL	INDIAN HLTH SER	6	ALASKA	9/78- 7/79	0
647	SITE	BROADCAST	INDIA	6	INDIA	8/75- 8/76	2171
647	SITE	EDUCATION	INDIA	6	INDIA	8/75- 8/76	2171
670	TEAM	EDUCATION	MONTANA ST U	6	MONTANA	9/77- 7/79	2
668	MOTOROLA	WAVE PROP	MOTOROLA	6	U.S.	7/77- 9/78	47
671	MSH	MEDICAL	MTN STS MTH COR	6	ROCKY MTNS	3/75- 5/75	22
605	PLACE	DATA TRANS	NASA	6	U.S.	9/74- 6/75	967
639	ALL DEMO	DEMO	NASA	6	U.S.	6/74- 7/79	322
605	PLACE	RANGING	NASA	6	U.S.	9/74- 6/75	967
108	LAUNCH SUPPORT	SUPPORT	NASA	6	U.S.	7/77- 2/78	7
620	GEOS-C	DATA TRANS	NASA/GSFC	6	WORLD	9/74- 7/79	894
617	TDRE	DATA TRANS	NASA/GSFC	6	WORLD	9/74- 7/79	622
618	TRUST	DATA TRANS	NASA/GSFC	6	U.S.	9/74- 7/75	40
602	VHRR RADIOMETER	METEOR.	NASA/GSFC	6	U.S.	6/74- 9/74	360
620	GEOS-C	SAT CONTRL	NASA/GSFC	6	WORLD	9/74- 7/79	894
607	IHDRAS	SAT CONTRL	NASA/GSFC	6	U.S.	6/74- 7/75	5
610	INTERFEROMETER	SAT CONTRL	NASA/GSFC	6	U.S.	6/74-11/78	104
604	SAPPSAC	SAT CONTRL	NASA/GSFC	6	U.S.	6/74- 1/75	72
617	TDRE	SAT CONTRL	NASA/GSFC	6	WORLD	9/74- 7/79	622
631	ENV MEAS EXP	SCIENTIFIC	NASA/GSFC	6	U.S.	6/74- 7/77	50
649	MAG FIELD STUDY	SCIENTIFIC	NASA/GSFC	6	U.S.	4/75- 6/75	295
609	MMW	WAVE PROP	NASA/GSFC	6	U.S.	6/74- 7/79	3271
601	RADIO FREQ INT.	WAVE PROP	NASA/GSFC	6	U.S.	6/74-12/76	877
603	RAD ASTRO INTER	WAVE PROP	NASA/GSFC	6	WORLD	6/74- 6/75	9
640	APOLLO-SOYUZ	SUPPORT	NASA/HOUSTON	6	WORLD	10/74- 7/75	333
666	UHF/NRL	SCIENTIFIC	NAVAL RES LAB	6	U.S.	9/77- 5/78	18
609	MMW	WAVE PROP	NAVAL RES LAB	6	MARYLAND	6/74- 7/79	3271
606	RADIO BEACON	WAVE PROP	NOAA	6	U.S.	6/74- 7/79	0
606	RADIO BEACON	WAVE PROP	NOAA	6	EUROPE	6/74- 7/79	0
609	MMW	WAVE PROP	OHIO STATE U.	6	OHIO	6/74- 7/79	3271
660	PLU	BROADCAST	PROJECT LOOK-UP	6	SO.AMERICA	1/76- 7/79	141
660	PLU	EDUCATION	PROJECT LOOK-UP	6	SO.AMERICA	1/76- 7/79	141
661	ALFE	BROADCAST	PSSC	6	ALASKA	9/77-10/78	1979
672	SAMFE	BROADCAST	PSSC	6	SAMOA	9/77- 2/78	444
661	ALFE	DATA TRANS	PSSC	6	ALASKA	9/77-10/78	1979
667	ALVA	EDUCATION	PSSC	6	ALASKA	9/77- 7/79	69
667	ALVA	EDUCATION	PSSC	6	U.S.(WEST)	9/77- 7/79	69
667	ALVA	MEDICAL	PSSC	6	ALASKA	9/77- 7/79	69
667	ALVA	MEDICAL	PSSC	6	U.S.(WEST)	9/77- 7/79	69

* ATS SCHEDULED TIME/CTS ACTUAL TIME

3.5 Sorted by Satellite (cont.)

ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS *
612	MET(ARC)	EDUCATION	ROCKY MTN STS	6	ROCKY MTNS	6/74- 6/75	1741
612	MET(ARC)	EDUCATION	ST. OF ALASKA	6	ALASKA	6/74- 6/75	1741
650	MAG DATA	SCIENTIFIC	UCLA	6	U.S.	5/75- 8/76	903
623	L-BAND EXP	WAVE PROP	U. OF PA	6	U.S.(EAST)	8/76- 1/77	787
609	MMW	WAVE PROP	U. OF TEXAS	6	TEXAS	6/74- 7/79	3271
612	MET(ARC)	EDUCATION	VETERANS ADM	6	APPALACHIA	6/74- 6/75	1741
612	MET(ARC)	MEDICAL	VETERANS ADM	6	APPALACHIA	6/74- 6/75	1741
609	MMW	WAVE PROP	VIRGINIA POLY	6	VIRGINIA	6/74- 7/79	3271
612	MET(ARC)	EDUCATION	WAMI	6	ALASKA/WASH	6/74- 6/75	1741
612	MET(ARC)	MEDICAL	WAMI	6	ALASKA/WASH	6/74- 6/75	1741
609	MMW	WAVE PROP	WESTINGHOUSE	6	MARYLAND	6/74- 7/79	3271

* ATS SCHEDULED TIME/CTS ACTUAL TIME

3.6 Sorted by Location

ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS *
CTS-22	ICE FLOW	DATA TRANS	NASA/LERC	CTS	ALASKA	8/76- 9/76	70
300	VHF IHCHIS	MEDICAL	IHCHIS	1	ALASKA	5/74- 5/74	2
227	MET ALASKA	EDUCATION	ST. OF ALASKA	1	ALASKA	6/69- OPEN	11314
227	MET ALASKA	MEDICAL	ST. OF ALASKA	1	ALASKA	6/69- OPEN	11314
677	IHS	COMPUTER	INDIAN HLTH SER	6	ALASKA	9/78- 7/79	0
677	IHS	CONFERENCE	INDIAN HLTH SER	6	ALASKA	9/78- 7/79	0
612	MET(ARC)	MEDICAL	INDIAN HLTH SER	6	ALASKA	6/74- 6/75	1741
677	IHS	MEDICAL	INDIAN HLTH SER	6	ALASKA	9/78- 7/79	0
661	ALFE	BROADCAST	PSSC	6	ALASKA	9/77-10/78	1979
661	ALFE	DATA TRANS	PSSC	6	ALASKA	9/77-10/78	1979
667	ALVA	EDUCATION	PSSC	6	ALASKA	9/77- 7/79	69
667	ALVA	MEDICAL	PSSC	6	ALASKA	9/77- 7/79	69
612	MET(ARC)	EDUCATION	ST. OF ALASKA	6	ALASKA	6/74- 6/75	1741
291	VHF ZURITA	SUPPORT	AEC	1	ALASKA/HAW.	6/73-12/73	62
CTS-13	DECENT MED ED	EDUCATION	U OF WASHINGTON	CTS	ALASKA/WASH	3/77- OPEN	292
CTS-13	DECENT MED ED	EDUCATION	WAMI	CTS	ALASKA/WASH	3/77- OPEN	292
CTS-13	DECENT MED ED	MEDICAL	WAMI	CTS	ALASKA/WASH	3/77- OPEN	292
612	MET(ARC)	EDUCATION	WAMI	6	ALASKA/WASH	6/74- 6/75	1741
612	MET(ARC)	MEDICAL	WAMI	6	ALASKA/WASH	6/74- 6/75	1741
318	DRI	DATA TRANS	DESERT RES INST	1	ANTARCTICA	12/76- 1/77	10
318	DRI	METEOR.	DESERT RES INST	1	ANTARCTICA	12/76- 1/77	10
289	VHF CALYPSO	DATA TRANS	COUSTEAU GROUP	3	ANTARCTICA	6/72- 1/76	358
289	VHF CALYPSO	SUPPORT	COUSTEAU GROUP	3	ANTARCTICA	6/72- 1/76	358
318	DRI	DATA TRANS	DESERT RES INST	3	ANTARCTICA	12/76- 1/77	627
318	DRI	METEOR.	DESERT RES INST	3	ANTARCTICA	12/76- 1/77	627
343	ORANGE	SUPPORT	NAT. SC. FOUND.	3	ANTARCTICA	7/78- 8/78	176
306	VHF DRAKE	SUPPORT	TEXAS A&M	3	ANTARCTICA	1/75- OPEN	428
CTS-12	AESP II	EDUCATION	APP. REG. COMM.	CTS	APPALACHIA	PENDING	0
286	MET(ARC)	EDUCATION	APP. REG. COMM.	3	APPALACHIA	6/74- OPEN	536
612	MET(ARC)	EDUCATION	APP. REG. COMM.	6	APPALACHIA	6/74- 6/75	1741
673	NIE	EDUCATION	APP. REG. COMM.	6	APPALACHIA	1/78- 7/79	3
612	MET(ARC)	EDUCATION	VETERANS ADM	6	APPALACHIA	6/74- 6/75	1741
612	MET(ARC)	MEDICAL	VETERANS ADM	6	APPALACHIA	6/74- 6/75	1741
302	NEA	EDUCATION	NAT EDUC ASSOC	1	APPAL/ALASK	1/76- 4/77	39
302	NEA	EDUCATION	NAT EDUC ASSOC	3	APPAL/ALASK	1/76- 4/77	76
288	GE/MARAD	DATA TRANS	GE	1	ATLANTIC	4/72- 5/72	7
288	GE/MARAD	MARITIME	GE	1	ATLANTIC	4/72- 5/72	7
288	GE/MARAD	RANGING	GE	1	ATLANTIC	4/72- 5/72	7
293	GE/EXXON	DATA TRANS	GE & EXXON	1	ATLANTIC	7/73- 2/74	90
293	GE/EXXON	MARITIME	GE & EXXON	1	ATLANTIC	7/73- 2/74	90
293	GE/EXXON	RANGING	GE & EXXON	1	ATLANTIC	7/73- 2/74	90
292	VHF CLIPPER	SUPPORT	MOODY COLLEGE	1	ATLANTIC	7/73- 3/77	4
239	VHF VANGUARD	CONFERENCE	USCG	1	ATLANTIC	6/68- 7/69	12
239	VHF VANGUARD	DATA TRANS	USCG	1	ATLANTIC	6/68- 7/69	12
288	GE/MARAD	DATA TRANS	GE	3	ATLANTIC	4/72- 5/72	46
288	GE/MARAD	MARITIME	GE	3	ATLANTIC	4/72- 5/72	46
288	GE/MARAD	RANGING	GE	3	ATLANTIC	4/72- 5/72	46
293	GE/EXXON	DATA TRANS	GE & EXXON	3	ATLANTIC	7/73- 2/74	186
293	GE/EXXON	MARITIME	GE & EXXON	3	ATLANTIC	7/73- 2/74	186
293	GE/EXXON	RANGING	GE & EXXON	3	ATLANTIC	7/73- 2/74	186
292	VHF CLIPPER	SUPPORT	MOODY COLLEGE	3	ATLANTIC	6/73- 8/77	342
226	VHF NETHERLAND	MARITIME	NETHERLANDS	3	ATLANTIC	8/70-12/71	265
309	NSF	SUPPORT	TEXAS A&M	3	ATLANTIC	3/76- 9/76	161
292	VHF CLIPPER	SUPPORT	TEXAS A&M	3	ATLANTIC	6/73- 8/77	342
225	VHF ENGLAND	MARITIME	UNITED KINDSOM	3	ATLANTIC	8/70-12/70	191

* ATS SCHEDULED TIME/CTS ACTUAL TIME

3.6 Sorted by Location (cont.)

ID#	EXP. NAME	CAT.	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS •
239	VHF VANGUARD	CONFERENCE	USCG	3	ATLANTIC	6/68-10/74	28
265	VANGUARD	DATA TRANS	USCG	3	ATLANTIC	3/72- 4/73	98
239	VHF VANGUARD	DATA TRANS	USCG	3	ATLANTIC	6/68-10/74	28
307	VHF OCEAN	SUPPORT	U. OF MIAMI	3	ATLANTIC	12/77- OPEN	2241
332	ENDEAVOR	SUPPORT	U. OF RHODE ISL	3	ATLANTIC	7/77- 1/78	168
247	ALPHA-2	RANGING	AII	5	ATLANTIC	7/70- 2/71	88
247	ALPHA-2	RANGING	USAF/SAMSO	5	ATLANTIC	7/70- 2/71	88
265	VANGUARD	RANGING	USCG	5	ATLANTIC	3/72- 4/73	232
344	BARBADOS	MEDICAL	DEPT OF ST/AID	3	BARBADOS	8/78- 9/78	14
290	VHF BERING SEA	SUPPORT	US/USSR	1	BERING SEA	12/72- 3/73	43
228	VHF GE	DATA TRANS	GE	1	BERMUDA	2/69- 8/71	41
228	VHF GE	MARITIME	GE	1	BERMUDA	2/69- 8/71	41
228	VHF GE	RANGING	GE	1	BERMUDA	2/69- 8/71	41
319	SIRIUS	RANGING	BAKER DEV CORP	3	BERMUDA	12/76- 1/77	40
335	VHF SAR SIM	RANGING	BAKER DEV CORP	3	BERMUDA	6/77- 9/77	15
319	SIRIUS	SUPPORT	BAKER DEV CORP	3	BERMUDA	12/76- 1/77	40
228	VHF GE	DATA TRANS	GE	3	BERMUDA	2/69- 8/71	142
228	VHF GE	MARITIME	GE	3	BERMUDA	2/69- 8/71	142
228	VHF GE	RANGING	GE	3	BERMUDA	2/69- 8/71	142
CTS-16	PROJ INTERCHG	EDUCATION	ARCH OF S.F.	CTS	CALIFORNIA	3/76- 6/78	45
257	SHF CRC	WAVE PROP	CANADA/CRC	1	CANADA	1/71-12/71	76
263	TELESAT	WAVE PROP	TELESAT CANADA	1	CANADA	9/72- 9/72	136
260	CRC C/L-BAND	WAVE PROP	CANADA	5	CANADA	9/71- 5/72	113
657	CRC	RANGING	CANADA/CRC	6	CANADA	9/74- 8/77	138
336	ERDA/DOD	SUPPORT	ERDA	1	ENEWETAK	10/77- 9/78	49
638	COMSAT PROP IND	WAVE PROP	COMSAT LABS	6	EUROPE	3/76- 7/76	667
608	PROPAGATION(E)	WAVE PROP	ESTEC	6	EUROPE	8/75-10/76	2263
606	RADIO BEACON	WAVE PROP	NOAA	6	EUROPE	6/74- 7/79	0
647	SITE	BROADCAST	INDIA	6	INDIA	8/75- 8/76	2171
647	SITE	EDUCATION	INDIA	6	INDIA	8/75- 8/76	2171
333	U. OF W. INDIES	EDUCATION	DEPT OF ST/AID	3	JAMAICA	1/78- 6/78	223
253	SHF VLBI	TIME/FREQ	RADIO RES LABS	1	JAPAN	1/77- 2/77	5
304	VHF OPN	TIME/FREQ	RADIO RES LABS	1	JAPAN	67- OPEN	158
253	SHF VLBI	TIME/FREQ	RADIO RES LABS	3	JAPAN	1/77- 2/77	190
CTS-25	CONGRESS	CONFERENCE	GEO WASH UNIV	CTS	MARYLAND	4/77- 8/78	39
609	MMW	WAVE PROP	NAVAL RES LAB	6	MARYLAND	6/74- 7/79	3271
609	MMW	WAVE PROP	WESTINGHOUSE	6	MARYLAND	6/74- 7/79	3271
330	MONTANA	SUPPORT	ST. OF MONTANA	3	MONTANA	6/77-11/77	163
670	TEAM	EDUCATION	MONTANA ST U	6	MONTANA	9/77- 7/79	2
609	MMW	WAVE PROP	ARMY	6	NEW JERSEY	6/74- 7/79	3271
609	MMW	WAVE PROP	BELL LAB	6	NEW JERSEY	6/74- 7/79	3271
261	GE L-BAND	RANGING	GE	1	N. AMERICA	6/70-10/72	1
251	L-BAND DOT	DATA TRANS	BOEING	3	N. AMERICA	4/74-10/76	128
261	GE L-BAND	RANGING	GE	3	N. AMERICA	6/70-10/72	51
251	L-BAND DOT	RANGING	BOEING	5	N. AMERICA	2/71- 7/74	557
252	L-BAND FAA	RANGING	BOEING	5	N. AMERICA	4/71- 4/72	275
252	L-BAND FAA	RANGING	FAA	5	N. AMERICA	4/71- 4/72	275
261	GE L-BAND	RANGING	GE	5	N. AMERICA	6/70- 6/73	152
244	MMW REG 1	WAVE PROP	NASA/GSFC	5	N. AMERICA	8/69- 9/71	1866
245	MMW REG 2	WAVE PROP	NASA/GSFC	5	N. AMERICA	8/69- 9/71	326
234	GE/FAA	RANGING	GE	1	N. ATLANTIC	11/69- 6/71	4
234	GE/FAA	RANGING	GE	3	N. ATLANTIC	11/69- 6/71	44
233	VHF NORWAY	METEOR.	NORWAY	3	N. ATLANTIC	11/70- 2/71	22
233	VHF NORWAY	RANGING	NORWAY	3	N. ATLANTIC	11/70- 2/71	22
664	SAR L-BAND C/O	RANGING	BOEING	6	N. ATLANTIC	8/74- 4/75	13

• ATS SCHEDULED TIME/CTS ACTUAL TIME

3.6 Sorted by Location (cont.)

ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS *
664	SAR L-BAND C/O	RANGING	FAA	6	N. ATLANTIC	8/74- 4/75	13
329	NORPAX	SUPPORT	U. OF CAL/NAVY	1	N. PACIFIC	5/77- 6/77	53
CTS-T	TEP/SHF	GRD TERM	NASA/LERC	CTS	OHIO	2/76- OPEN	839
CTS-01	COMM LINK CHAR	WAVE PROP	OHIO STATE U	CTS	OHIO	2/76-12/77	315
609	MMW	WAVE PROP	OHIO STATE U.	6	OHIO	6/74- 7/79	3271
338	DISP	CONFERENCE	DEPT OF INTER	1	PACIFIC	12/77- OPEN	1453
315	ERDA	DATA TRANS	ERDA	1	PACIFIC	1/78- 1/79	146
315	ERDA	SUPPORT	ERDA	1	PACIFIC	1/78- 1/79	146
295	VHF NIAID	MEDICAL	NIAID	1	PACIFIC	10/73- OPEN	237
235	VHF HAWAII	EDUCATION	PEACESAT	1	PACIFIC	2/72- OPEN	6942
235	VHF HAWAII	MEDICAL	PEACESAT	1	PACIFIC	2/72- OPEN	6942
305	VHF ALOHA	COMPUTER	U. OF HAWAII	1	PACIFIC	72- OPEN	1167
297	VHF USP/FIJI	EDUCATION	U. SO. PACIFIC	1	PACIFIC	1/74- OPEN	2667
315	ERDA	DATA TRANS	ERDA	3	PACIFIC	7/76- 8/76	5
315	ERDA	SUPPORT	ERDA	3	PACIFIC	7/76- 8/76	5
265	VANGUARD	DATA TRANS	USCG	3	PACIFIC	3/72- 4/73	98
322	WHOI	SUPPORT	WOODS HOLE INST	3	PACIFIC	1/77- 2/77	244
265	VANGUARD	RANGING	USCG	5	PACIFIC	3/72- 4/73	232
342	PERU	SUPPORT	ADVENTURES UNL.	3	PERU	6/78- 7/78	46
331	PLU	BROADCAST	PROJECT LOOK-UP	3	PUERTO RICO	1/76- OPEN	87
331	PLU	EDUCATION	PROJECT LOOK-UP	3	PUERTO RICO	1/76- OPEN	87
CTS-17	HEALTH ED TV	EDUCATION	ASSOC OF W HOSP	CTS	ROCKY MTNS	PENDING	0
CTS-17	HEALTH ED TV	MEDICAL	ASSOC OF W HOSP	CTS	ROCKY MTNS	PENDING	0
671	MSH	MEDICAL	MTN STS MTH COR	6	ROCKY MTNS	3/75- 5/75	22
612	MET(ARC)	EDUCATION	ROCKY MTN STS	6	ROCKY MTNS	6/74- 6/75	1741
340	SAMOA TV SAMFE	BROADCAST	PSSC	1	SAMOA	9/77- OPEN	53
320	SAMOA	EDUCATION	U. SO. PACIFIC	1	SAMOA	1/77- OPEN	258
340	SAMOA TV SAMFE	BROADCAST	PSSC	3	SAMOA	9/77- OPEN	96
672	SAMFE	BROADCAST	PSSC	6	SAMOA	9/77- 2/78	444
660	PLU	BROADCAST	PROJECT LOOK-UP	6	SO.AMERICA	1/76- 7/79	141
660	PLU	EDUCATION	PROJECT LOOK-UP	6	SO.AMERICA	1/76- 7/79	141
317	LAMONT	SUPPORT	LAMONT/DOHERTY	3	SO. OCEAN	10/76- 3/77	161
CTS-01	COMM LINK CHAR	WAVE PROP	U. OF TEXAS	CTS	TEXAS	2/76-12/77	315
609	MMW	WAVE PROP	U. OF TEXAS	6	TEXAS	6/74- 7/79	3271
301	VHF GATE	SUPPORT	NOAA	3	UNKNOWN	1/74- 9/74	388
CTS-30	TER OF TOMORROW	GRD TERM	FCC	CTS	U.S.	3/78-12/78	56
CTS-33	WIDE BAND COMM.	CONFERENCE	GTE LABS	CTS	U.S.	1/79- OPEN	6
CTS-07	BIOMED COMMUN	EDUCATION	LISTER HILL	CTS	U.S.	6/77- OPEN	404
CTS-07	BIOMED COMMUN	MEDICAL	LISTER HILL	CTS	U.S.	6/77- OPEN	404
CTS-18	INTRANASA COMM	CONFERENCE	NASA/ARC	CTS	U.S.	5/76- OPEN	382
CTS-18	INTRANASA COMM	CONFERENCE	NASA/GSFC	CTS	U.S.	5/76- OPEN	382
CTS-20	ADV GRD REC EQ	GRD TERM	NASA/GSFC	CTS	U.S.	4/76- 4/78	87
CTS-01	COMM LINK CHAR	WAVE PROP	NASA/GSFC	CTS	U.S.	2/76-12/77	315
CTS-18	INTRANASA COMM	CONFERENCE	NASA/LERC	CTS	U.S.	5/76- OPEN	382
CTS-27	WOMENS SAT SER	CONFERENCE	NAT WOMENS AG	CTS	U.S.	PENDING	0
CTS-21	PSSC	DEMO	PSSC	CTS	U.S.	2/77- OPEN	284
CTS-21	PSSC	SUPPORT	PSSC	CTS	U.S.	2/77- OPEN	284
CTS-09	SALINET	EDUCATION	SALINET	CTS	U.S.	10/77- 4/78	10
CTS-29	UNIV GRAD STUDY	EDUCATION	VARIAN ASSOC	CTS	U.S.	5/78-12/78	49
312	ALC	CONFERENCE	AMER LUTHERAN C	1	U.S.	6/76- OPEN	219
185	VHF A/C	A/C COMM	ARINC	1	U.S.	1/67- 6/70	264
268	L-BAND TRILAT	RANGING	GE	1	U.S.	1/74- 1/76	19
294	SP MET	SUPPORT	MET	1	U.S.	1/73- 8/77	1654
108	LAUNCH SUPPORT	SUPPORT	NASA	1	U.S.	1/67- 1/76	930
258	SHF SEARCH	LAW ENFORC	PUBLIC SYST INC	1	U.S.	12/71-12/71	68

* ATS SCHEDULED TIME/CTS ACTUAL TIME

3.6 Sorted by Location (cont.)

ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS *
284	VHF HIGH NOTE	RANGING	SANDIA/AEC	1	U.S.	3/71- 6/72	5
253	SHF VLBI	TIME/FREQ	SMITHSONIAN INS	1	U.S.	5/71-10/72	2
185	VHF A/C	A/C COMM	ARINC	3	U.S.	1/67- 6/70	308
310	VHF DEA	CONFERENCE	DRUG ENF AGY	3	U.S.	4/76- OPEN	131
310	VHF DEA	RANGING	DRUG ENF AGY	3	U.S.	4/76- OPEN	131
310	VHF DEA	CONFERENCE	GE	3	U.S.	4/76- OPEN	131
268	L-BAND TRILAT	RANGING	GE	3	U.S.	1/74- 1/76	98
310	VHF DEA	RANGING	GE	3	U.S.	4/76- OPEN	131
294	SP MET	SUPPORT	MET	3	U.S.	1/73- 8/77	1918
108	LAUNCH SUPPORT	SUPPORT	NASA	3	U.S.	1/67- 8/74	369
211	IDCS	METEOR.	NOAA	3	U.S.	11/67-10/72	1050
211	IDCS	SAT PHOTOS	NOAA	3	U.S.	11/67-10/72	1050
284	VHF HIGH NOTE	RANGING	SANDIA/AEC	3	U.S.	3/71- 6/72	5
287	VHF SEEK	METEOR.	SIERRA RES CORP	3	U.S.	1/72-12/72	9
253	SHF VLBI	TIME/FREQ	SMITHSONIAN INS	3	U.S.	5/71-10/72	190
248	SP L-BAND	CONFERENCE	AII	5	U.S.	8/74- 4/75	135
248	SP L-BAND	DATA TRANS	AII	5	U.S.	8/74- 4/75	135
268	L-BAND TRILAT	RANGING	GE	5	U.S.	1/74- 1/76	172
108	LAUNCH SUPPORT	SUPPORT	NASA	5	U.S.	3/67-10/72	69
253	SHF VLBI	TIME/FREQ	SMITHSONIAN INS	5	U.S.	5/71-10/72	0
668	MOTOROLA	WAVE PROP	MOTOROLA	6	U.S.	7/77- 9/78	47
605	PLACE	DATA TRANS	NASA	6	U.S.	9/74- 6/75	967
639	ALL DEMO	DEMO	NASA	6	U.S.	6/74- 7/79	322
605	PLACE	RANGING	NASA	6	U.S.	9/74- 6/75	967
108	LAUNCH SUPPORT	SUPPORT	NASA	6	U.S.	7/77- 2/78	7
618	TRUST	DATA TRANS	NASA/GSFC	6	U.S.	9/74- 7/75	40
602	VHRR RADIOMETER	METEOR.	NASA/GSFC	6	U.S.	6/74- 9/74	360
607	IHDRAS	SAT CONTRL	NASA/GSFC	6	U.S.	6/74- 7/75	5
610	INTERFEROMETER	SAT CONTRL	NASA/GSFC	6	U.S.	6/74-11/78	104
604	SAPPSAC	SAT CONTRL	NASA/GSFC	6	U.S.	6/74- 1/75	72
631	ENV MEAS EXP	SCIENTIFIC	NASA/GSFC	6	U.S.	6/74- 7/77	50
649	MAG FIELD STUDY	SCIENTIFIC	NASA/GSFC	6	U.S.	4/75- 6/75	295
609	MMW	WAVE PROP	NASA/GSFC	6	U.S.	6/74- 7/79	3271
601	RADIO FREQ INT.	WAVE PROP	NASA/GSFC	6	U.S.	6/74-12/76	877
666	UHF/HRL	SCIENTIFIC	NAVAL RES LAB	6	U.S.	9/77- 5/78	18
606	RADIO BEACON	WAVE PROP	NOAA	6	U.S.	6/74- 7/79	0
650	MAG DATA	SCIENTIFIC	UCLA	6	U.S.	5/75- 8/76	903
CTS-24	DICE	DATA TRANS	COMSAT LABS	CTS	U.S.(EAST)	5/76- OPEN	131
CTS-06	TET/COMSAT	GRD TERM	COMSAT LABS	CTS	U.S.(EAST)	2/76- OPEN	266
CTS-24	DICE	DATA TRANS	NASA/LERC	CTS	U.S.(EAST)	6/77- OPEN	131
CTS-15	TELECONFERENCE	CONFERENCE	WESTINGHOUSE	CTS	U.S.(EAST)	2/76- OPEN	286
102	DATA XMISSION	MEDICAL	DUKE U. MED CEN	1	U.S.(EAST)	11/71-11/71	54
311	GSFC	DEMO	NASA/GSFC	3	U.S.(EAST)	7/76- OPEN	1705
658	COMSAT PROP US	WAVE PROP	COMSAT LABS	6	U.S.(EAST)	6/74- 6/78	159
674	GE L-BAND	RANGING	GE	6	U.S.(EAST)	12/77- 7/79	573
674	GE L-BAND	SUPPORT	GE	6	U.S.(EAST)	12/77- 7/79	573
623	L-BAND EXP	WAVE PROP	U. OF PA	6	U.S.(EAST)	8/76- 1/77	787
282	VHF NLM	COMPUTER	LISTER HILL	1	U.S.(N.W.)	10/71- OPEN	619
282	VHF NLM	MEDICAL	LISTER HILL	1	U.S.(N.W.)	10/71- OPEN	619
CTS-19	SAT. DIST.	DATA TRANS	SECA	CTS	U.S.(SOUTH)	12/76- OPEN	655
316	NSTL	MEDICAL	NAT SP TECH LAB	3	U.S.(SOUTH)	10/76-10/76	71
316	NSTL	MEDICAL	SO REG MED CONS	3	U.S.(SOUTH)	10/76-10/76	71
CTS-35	CT SCANNING NET	MEDICAL	U. OF COLORADO	CTS	U.S.(WEST)	4/79- 7/79	0
CTS-11	HEALTH/COMMUN	EDUCATION	VETERANS ADM	CTS	U.S.(WEST)	6/77- OPEN	306
CTS-11	HEALTH/COMMUN	MEDICAL	VETERANS ADM	CTS	U.S.(WEST)	6/77- OPEN	306

* ATS SCHEDULED TIME/CTS ACTUAL TIME

3.6 Sorted by Location (cont.)

ID#	EXP. NAME	CAT.	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS *
285	VHF STANFORD	EDUCATION	STANFORD UNIV	1	U.S.(WEST)	5/71- 6/72	2
250	L-BAND RANGING	RANGING	WESTINGHOUSE	1	U.S.(WEST)	2/71- 5/71	6
285	VHF STANFORD	EDUCATION	STANFORD UNIV	3	U.S.(WEST)	5/71- 6/72	139
283	VHF UCLA	EDUCATION	TRW	3	U.S.(WEST)	9/71-10/71	15
283	VHF UCLA	EDUCATION	UCLA	3	U.S.(WEST)	9/71-10/71	15
250	L-BAND RANGING	RANGING	WESTINGHOUSE	3	U.S.(WEST)	2/71- 5/71	0
250	L-BAND RANGING	RANGING	WESTINGHOUSE	5	U.S.(WEST)	2/71- 5/71	99
246	SSRA	RANGING	WESTINGHOUSE	5	U.S.(WEST)	4/71- 5/71	1
667	ALVA	EDUCATION	PSSC	6	U.S.(WEST)	9/77- 7/79	69
667	ALVA	MEDICAL	PSSC	6	U.S.(WEST)	9/77- 7/79	69
CTS-04	COLLEGE CURR	EDUCATION	CARLETON UNIV	CTS	U.S./CANADA	2/76- OPEN	446
CTS-04	COLLEGE CURR	EDUCATION	STANFORD UNIV	CTS	U.S./CANADA	2/76- OPEN	446
CTS-28	VLBI	TIME/FREQ	UNIV OF ILL	CTS	U.S./CANADA	5/78-12/78	120
CTS-31	3 WAY TIME TRAN	TIME/FREQ	U.S. NAVAL OBS.	CTS	U.S./CANADA	1/79- 7/79	0
CTS-26	PROJ ADJUNCT	CONFERENCE	SAT BUS SYSTEMS	CTS	VIRGINIA	9/77- 2/78	178
CTS-26	PROJ ADJUNCT	DATA TRANS	SAT BUS SYSTEMS	CTS	VIRGINIA	9/77- 2/78	178
CTS-01	COMM LINK CHAR	WAVE PROP	VIRGINIA POLY	CTS	VIRGINIA	2/76-12/77	315
609	MMW	WAVE PROP	COMSAT LABS	6	VIRGINIA	6/74- 7/79	3271
609	MMW	WAVE PROP	VIRGINIA POLY	6	VIRGINIA	6/74- 7/79	3271
609	MMW	WAVE PROP	BATTELLE LAB	6	WASHINGTON	6/74- 7/79	3271
663	U. OF W. INDIES	BROADCAST	DEPT OF ST/AID	6	WEST INDIES	10/78- 7/79	66
663	U. OF W. INDIES	EDUCATION	DEPT OF ST/AID	6	WEST INDIES	10/78- 7/79	66
210	MSSCC	DATA TRANS	NOAA	1	WORLD	3/69- 6/72	7
205	SSCC	DATA TRANS	NOAA	1	WORLD	3/69- OPEN	8372
183	WEFAX	DATA TRANS	NOAA	1	WORLD	3/69- OPEN	5957
210	MSSCC	METEOR.	NOAA	1	WORLD	3/69- 6/72	7
205	SSCC	METEOR.	NOAA	1	WORLD	3/69- OPEN	8372
183	WEFAX	METEOR.	NOAA	1	WORLD	3/69- OPEN	5957
264	MARAD/AII/PLACE	DATA TRANS	AII	3	WORLD	1/73- OPEN	131
264	MARAD/AII/PLACE	MARITIME	AII	3	WORLD	1/73- OPEN	131
210	MSSCC	DATA TRANS	NOAA	3	WORLD	3/69- OPEN	26966
205	SSCC	DATA TRANS	NOAA	3	WORLD	3/69- OPEN	20
183	WEFAX	DATA TRANS	NOAA	3	WORLD	3/69- OPEN	3943
210	MSSCC	METEOR.	NOAA	3	WORLD	3/69- OPEN	26966
205	SSCC	METEOR.	NOAA	3	WORLD	3/69- OPEN	20
183	WEFAX	METEOR.	NOAA	3	WORLD	3/69- OPEN	3943
264	MARAD/AII/PLACE	DATA TRANS	AII	5	WORLD	1/73- OPEN	912
264	MARAD/AII/PLACE	MARITIME	AII	5	WORLD	1/73- OPEN	912
264	MARAD/AII/PLACE	RANGING	AII	5	WORLD	1/73- OPEN	912
620	GEOS-C	DATA TRANS	NASA/GSFC	6	WORLD	9/74- 7/79	894
617	TDRE	DATA TRANS	NASA/GSFC	6	WORLD	9/74- 7/79	622
620	GEOS-C	SAT CONTRL	NASA/GSFC	6	WORLD	9/74- 7/79	894
617	TDRE	SAT CONTRL	NASA/GSFC	6	WORLD	9/74- 7/79	622
603	RAD ASTRO INTER	WAVE PROP	NASA/GSFC	6	WORLD	6/74- 6/75	9
640	APOLLO-SOYUZ	SUPPORT	NASA/HOUSTON	6	WORLD	10/74- 7/75	333
281	LOS ALAMOS	A/C COMM	EG&G	1	W. HEMIS.	10/70-10/71	265
232	VHF EG&G	A/C COMM	EG&G	1	W. HEMIS.	6/68-10/72	48
232	VHF EG&G	SUPPORT	EG&G	1	W. HEMIS.	6/68-10/72	48
107	SPEC SHF	SUPPORT	GE	1	W. HEMIS.	68- 70	1929
202	S/C SUPPORT	SUPPORT	NASA	1	W. HEMIS.	4/69- 70	270
227	NET ALASKA	EDUCATION	NAT EDUC ASSOC	1	W. HEMIS.	6/69- OPEN	11314
321	FLTAC	CONFERENCE	DEPT OF NAVY	3	W. HEMIS.	1/77- OPEN	391
107	SPEC SHF	SUPPORT	GE	3	W. HEMIS.	68- 70	1613
230	VHF B/ION	SUPPORT	MAX PLANCK INST	3	W. HEMIS.	3/71- 9/71	176
231	VHF MSFN PROP	WAVE PROP	MSFN NETWORK	3	W. HEMIS.	9/70- 2/71	22

* ATS SCHEDULED TIME/CTS ACTUAL TIME

3.6 Sorted by Location (cont.)

ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS *
230	VHF B/ION	SUPPORT	NASA/WALLOPS	3	W. HEMIS.	3/71- 9/71	176
238	VHF NBS	TIME/FREQ	NAT BUR OF STDS	3	W. HEMIS.	8/71- 8/72	327
236	VHF BRAZIL	EDUCATION	STANFORD UNIV	3	W. HEMIS.	2/70- OPEN	38
324	SIPLE	SUPPORT	STANFORD UNIV	3	W. HEMIS.	2/77- OPEN	1166
325	BYRE	SUPPORT	TEXAS A&M	3	W. HEMIS.	4/77-10/78	315
249	MARAD	DATA TRANS	AII	5	W. HEMIS.	3/70-12/71	65
249	MARAD	MARITIME	AII	5	W. HEMIS.	3/70-12/71	65
249	MARAD	RANGING	AII	5	W. HEMIS.	3/70-12/71	65
259	COMSAT C/L PROP	WAVE PROP	COMSAT LABS	5	W. HEMIS.	1/72- 4/72	37
249	MARAD	DATA TRANS	MARAD	5	W. HEMIS.	3/70-12/71	65
249	MARAD	MARITIME	MARAD	5	W. HEMIS.	3/70-12/71	65

* ATS SCHEDULED TIME/CTS ACTUAL TIME

3.7 Sorted by Chronology

IDS	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS *
304	VHF OPN	TIME/FREQ	RADIO RES LABS	1	JAPAN	67- OPEN	158
185	VHF A/C	A/C COMM	ARINC	1	U.S.	1/67- 6/70	264
108	LAUNCH SUPPORT	SUPPORT	NASA	1	U.S.	1/67- 1/76	930
185	VHF A/C	A/C COMM	ARINC	3	U.S.	1/67- 6/70	308
108	LAUNCH SUPPORT	SUPPORT	NASA	3	U.S.	1/67- 8/76	369
108	LAUNCH SUPPORT	SUPPORT	NASA	5	U.S.	3/67-10/72	69
211	IDCS	METEOR.	NOAA	3	U.S.	11/67-10/72	1050
211	IDCS	SAT PHOTOS	NOAA	3	U.S.	11/67-10/72	1050
107	SPEC SHF	SUPPORT	GE	1	W. HEMIS.	68- 70	1929
107	SPEC SHF	SUPPORT	GE	3	W. HEMIS.	68- 70	1613
239	VHF VANGUARD	CONFERENCE	USCG	1	ATLANTIC	6/68- 7/69	12
239	VHF VANGUARD	DATA TRANS	USCG	1	ATLANTIC	6/68- 7/69	12
239	VHF VANGUARD	CONFERENCE	USCG	3	ATLANTIC	6/68-10/74	28
239	VHF VANGUARD	DATA TRANS	USCG	3	ATLANTIC	6/68-10/74	28
232	VHF E6C6	A/C COMM	E6C6	1	W. HEMIS.	6/68-10/72	48
232	VHF E6C6	SUPPORT	E6C6	1	W. HEMIS.	6/68-10/72	48
228	VHF GE	DATA TRANS	GE	1	BERMUDA	2/69- 8/71	41
228	VHF GE	MARITIME	GE	1	BERMUDA	2/69- 8/71	41
228	VHF GE	RANGING	GE	1	BERMUDA	2/69- 8/71	41
228	VHF GE	DATA TRANS	GE	3	BERMUDA	2/69- 8/71	142
228	VHF GE	MARITIME	GE	3	BERMUDA	2/69- 8/71	142
228	VHF GE	RANGING	GE	3	BERMUDA	2/69- 8/71	142
210	MSSCC	DATA TRANS	NOAA	1	WORLD	3/69- 6/72	7
205	SSCC	DATA TRANS	NOAA	1	WORLD	3/69- OPEN	8372
183	WEFAX	DATA TRANS	NOAA	1	WORLD	3/69- OPEN	5957
210	MSSCC	METEOR.	NOAA	1	WORLD	3/69- 6/72	7
205	SSCC	METEOR.	NOAA	1	WORLD	3/69- OPEN	8372
183	WEFAX	METEOR.	NOAA	1	WORLD	3/69- OPEN	5957
210	MSSCC	DATA TRANS	NOAA	3	WORLD	3/69- OPEN	26966
205	SSCC	DATA TRANS	NOAA	3	WORLD	3/69- OPEN	20
183	WEFAX	DATA TRANS	NOAA	3	WORLD	3/69- OPEN	3943
210	MSSCC	METEOR.	NOAA	3	WORLD	3/69- OPEN	26966
205	SSCC	METEOR.	NOAA	3	WORLD	3/69- OPEN	20
183	WEFAX	METEOR.	NOAA	3	WORLD	3/69- OPEN	3943
202	S/C SUPPORT	SUPPORT	NASA	1	W. HEMIS.	4/69- 70	270
227	MET ALASKA	EDUCATION	ST. OF ALASKA	1	ALASKA	6/69- OPEN	11314
227	MET ALASKA	MEDICAL	ST. OF ALASKA	1	ALASKA	6/69- OPEN	11314
227	MET ALASKA	EDUCATION	NAT EDUC ASSOC	1	W. HEMIS.	6/69- OPEN	11314
244	MMW REG 1	WAVE PROP	NASA/GSFC	5	N. AMERICA	8/69- 9/71	1866
245	MMW REG 2	WAVE PROP	NASA/GSFC	5	N. AMERICA	8/69- 9/71	326
234	GE/FAA	RANGING	GE	1	N. ATLANTIC	11/69- 6/71	4
234	GE/FAA	RANGING	GE	3	N. ATLANTIC	11/69- 6/71	44
236	VHF BRAZIL	EDUCATION	STANFORD UNIV	3	W. HEMIS.	2/70- OPEN	38
249	MARAD	DATA TRANS	AII	5	W. HEMIS.	3/70-12/71	65
249	MARAD	MARITIME	AII	5	W. HEMIS.	3/70-12/71	65
249	MARAD	RANGING	AII	5	W. HEMIS.	3/70-12/71	65
249	MARAD	DATA TRANS	MARAD	5	W. HEMIS.	3/70-12/71	65
249	MARAD	MARITIME	MARAD	5	W. HEMIS.	3/70-12/71	65
261	GE L-BAND	RANGING	GE	1	N. AMERICA	6/70-10/72	1
261	GE L-BAND	RANGING	GE	3	N. AMERICA	6/70-10/72	51
261	GE L-BAND	RANGING	GE	5	N. AMERICA	6/70- 6/73	152
247	ALPHA-2	RANGING	AII	5	ATLANTIC	7/70- 2/71	88
247	ALPHA-2	RANGING	USAF/SAMSO	5	ATLANTIC	7/70- 2/71	88
226	VHF NETHERLAND	MARITIME	NETHERLANDS	3	ATLANTIC	8/70-12/71	265
225	VHF ENGLAND	MARITIME	UNITED KINDGOM	3	ATLANTIC	8/70-12/70	191

* ATS SCHEDULED TIME/CTS ACTUAL TIME

3.7 Sorted by Chronology (cont.)

ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS •
231	VHF MSFN PROP	WAVE PROP	MSFN NETWORK	3	W. HEMIS.	9/70- 2/71	22
261	LOS ALAMOS	A/C COMM	E6&6	1	W. HEMIS.	10/70-10/71	265
233	VHF NORWAY	METEOR.	NORWAY	3	N. ATLANTIC	11/70- 2/71	22
233	VHF NORWAY	RANGING	NORWAY	3	N. ATLANTIC	11/70- 2/71	22
257	SHF CRC	WAVE PROP	CANADA/CRC	1	CANADA	1/71-12/71	76
251	L-BAND DOT	RANGING	BOEING	5	N. AMERICA	2/71- 7/74	557
250	L-BAND RANGING	RANGING	WESTINGHOUSE	1	U.S.(WEST)	2/71- 5/71	6
250	L-BAND RANGING	RANGING	WESTINGHOUSE	3	U.S.(WEST)	2/71- 5/71	0
250	L-BAND RANGING	RANGING	WESTINGHOUSE	5	U.S.(WEST)	2/71- 5/71	99
284	VHF HIGH NOTE	RANGING	SANDIA/AEC	1	U.S.	3/71- 6/72	5
284	VHF HIGH NOTE	RANGING	SANDIA/AEC	3	U.S.	3/71- 6/72	5
230	VHF B/ION	SUPPORT	MAX PLANCK INST	3	W. HEMIS.	3/71- 9/71	176
230	VHF B/ION	SUPPORT	NASA/WALLOPS	3	W. HEMIS.	3/71- 9/71	176
252	L-BAND FAA	RANGING	BOEING	5	N. AMERICA	4/71- 4/72	275
252	L-BAND FAA	RANGING	FAA	5	N. AMERICA	4/71- 4/72	275
246	SSRA	RANGING	WESTINGHOUSE	5	U.S.(WEST)	4/71- 5/71	1
253	SHF VLBI	TIME/FREQ	SMITHSONIAN INS	1	U.S.	5/71-10/72	2
253	SHF VLBI	TIME/FREQ	SMITHSONIAN INS	3	U.S.	5/71-10/72	190
253	SHF VLBI	TIME/FREQ	SMITHSONIAN INS	5	U.S.	5/71-10/72	0
285	VHF STANFORD	EDUCATION	STANFORD UNIV	1	U.S.(WEST)	5/71- 6/72	2
285	VHF STANFORD	EDUCATION	STANFORD UNIV	3	U.S.(WEST)	5/71- 6/72	139
238	VHF NBS	TIME/FREQ	NAT BUR OF STDS	3	W. HEMIS.	8/71- 8/72	327
260	CRC C/L-BAND	WAVE PROP	CANADA	5	CANADA	9/71- 5/72	113
283	VHF UCLA	EDUCATION	TRW	3	U.S.(WEST)	9/71-10/71	15
283	VHF UCLA	EDUCATION	UCLA	3	U.S.(WEST)	9/71-10/71	15
282	VHF NLM	COMPUTER	LISTEN HILL	1	U.S.(N.W.)	10/71- OPEN	619
282	VHF NLM	MEDICAL	LISTER HILL	1	U.S.(N.W.)	10/71- OPEN	619
102	DATA XMISSION	MEDICAL	DUKE U. MED CEN	1	U.S.(EAST)	11/71-11/71	54
258	SHF SEARCH	LAW ENFORC	PUBLIC SYST INC	1	U.S.	12/71-12/71	68
305	VHF ALOHA	COMPUTER	U. OF HAWAII	1	PACIFIC	72- OPEN	1167
287	VHF SEEK	METEOR.	SIERRA RES CORP	3	U.S.	1/72-12/72	9
259	COMSAT C/L PROP	WAVE PROP	COMSAT LABS	5	W. HEMIS.	1/72- 4/72	37
235	VHF HAWAII	EDUCATION	PEACESAT	1	PACIFIC	2/72- OPEN	6942
235	VHF HAWAII	MEDICAL	PEACESAT	1	PACIFIC	2/72- OPEN	6942
265	VANGUARD	DATA TRANS	USCG	3	ATLANTIC	3/72- 4/73	98
265	VANGUARD	RANGING	USCG	5	ATLANTIC	3/72- 4/73	232
265	VANGUARD	DATA TRANS	USCG	3	PACIFIC	3/72- 4/73	98
265	VANGUARD	RANGING	USCG	5	PACIFIC	3/72- 4/73	232
288	GE/MARAD	DATA TRANS	GE	1	ATLANTIC	4/72- 5/72	7
288	GE/MARAD	MARITIME	GE	1	ATLANTIC	4/72- 5/72	7
288	GE/MARAD	RANGING	GE	1	ATLANTIC	4/72- 5/72	7
288	GE/MARAD	DATA TRANS	GE	3	ATLANTIC	4/72- 5/72	46
288	GE/MARAD	MARITIME	GE	3	ATLANTIC	4/72- 5/72	46
288	GE/MARAD	RANGING	GE	3	ATLANTIC	4/72- 5/72	46
289	VHF CALYPSO	DATA TRANS	COUSTEAU GROUP	3	ANTARCTICA	6/72- 1/76	358
289	VHF CALYPSO	SUPPORT	COUSTEAU GROUP	3	ANTARCTICA	6/72- 1/76	358
263	TELESAT	WAVE PROP	TELESAT CANADA	1	CANADA	9/72- 9/72	136
290	VHF BERING SEA	SUPPORT	US/USSR	1	BERING SEA	12/72- 3/73	43
294	SP MET	SUPPORT	MET	1	U.S.	1/73- 8/77	1654
294	SP MET	SUPPORT	MET	3	U.S.	1/73- 8/77	1918
264	MARAD/AII/PLACE	DATA TRANS	AII	3	WORLD	1/73- OPEN	131
264	MARAD/AII/PLACE	MARITIME	AII	3	WORLD	1/73- OPEN	131
264	MARAD/AII/PLACE	DATA TRANS	AII	5	WORLD	1/73- OPEN	912
264	MARAD/AII/PLACE	MARITIME	AII	5	WORLD	1/73- OPEN	912
264	MARAD/AII/PLACE	RANGING	AII	5	WORLD	1/73- OPEN	912

• ATS SCHEDULED TIME/CTS ACTUAL TIME

3.7 Sorted by Chronology (cont.)

ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS •
291	VHF ZURITA	SUPPORT	AEC	1	ALASKA/HAW.	6/73-12/73	62
292	VHF CLIPPER	SUPPORT	MOODY COLLEGE	3	ATLANTIC	6/73- 8/77	342
292	VHF CLIPPER	SUPPORT	TEXAS A&M	3	ATLANTIC	6/73- 8/77	342
293	GE/EXXON	DATA TRANS	GE & EXXON	1	ATLANTIC	7/73- 2/74	90
293	GE/EXXON	MARITIME	GE & EXXON	1	ATLANTIC	7/73- 2/74	90
293	GE/EXXON	RANGING	GE & EXXON	1	ATLANTIC	7/73- 2/74	90
292	VHF CLIPPER	SUPPORT	MOODY COLLEGE	1	ATLANTIC	7/73- 8/77	4
293	GE/EXXON	DATA TRANS	GE & EXXON	3	ATLANTIC	7/73- 2/74	186
293	GE/EXXON	MARITIME	GE & EXXON	3	ATLANTIC	7/73- 2/74	186
293	GE/EXXON	RANGING	GE & EXXON	3	ATLANTIC	7/73- 2/74	186
295	VHF NIAID	MEDICAL	NIAID	1	PACIFIC	10/73- OPEN	237
297	VHF USP/FIJI	EDUCATION	U. SO. PACIFIC	1	PACIFIC	1/74- OPEN	2667
301	VHF GATE	SUPPORT	NOAA	3	UNKNOWN	1/74- 9/74	388
268	L-BAND TRILAT	RANGING	GE	1	U.S.	1/74- 1/76	19
268	L-BAND TRILAT	RANGING	GE	3	U.S.	1/74- 1/76	98
268	L-BAND TRILAT	RANGING	GE	5	U.S.	1/74- 1/76	172
251	L-BAND DOT	DATA TRANS	BOEING	3	N. AMERICA	4/74-10/76	178
300	VHF IHCHIS	MEDICAL	IHCHIS	1	ALASKA	5/74- 5/74	2
612	MET(ARC)	MEDICAL	INDIAN HLTH SER	6	ALASKA	6/74- 6/75	1741
612	MET(ARC)	EDUCATION	ST. OF ALASKA	6	ALASKA	6/74- 6/75	1741
612	MET(ARC)	EDUCATION	MAMI	6	ALASKA/WASH	6/74- 6/75	1741
612	MET(ARC)	MEDICAL	MAMI	6	ALASKA/WASH	6/74- 6/75	1741
286	MET(ARC)	EDUCATION	APP. REG. COMM.	3	APPALACHIA	6/74- OPEN	536
612	MET(ARC)	EDUCATION	APP. REG. COMM.	6	APPALACHIA	6/74- 6/75	1741
612	MET(ARC)	EDUCATION	VETERANS ADM	6	APPALACHIA	6/74- 6/75	1741
612	MET(ARC)	MEDICAL	VETERANS ADM	6	APPALACHIA	6/74- 6/75	1741
606	RADIO BEACON	WAVE PROP	NOAA	6	EUROPE	6/74- 7/79	0
609	MMW	WAVE PROP	NAVAL RES LAB	6	MARYLAND	6/74- 7/79	3271
609	MMW	WAVE PROP	WESTINGHOUSE	6	MARYLAND	6/74- 7/79	3271
609	MMW	WAVE PROP	ARMY	6	NEW JERSEY	6/74- 7/79	3271
609	MMW	WAVE PROP	BELL LAB	6	NEW JERSEY	6/74- 7/79	3271
609	MMW	WAVE PROP	OHIO STATE U.	6	OHIO	6/74- 7/79	3271
612	MET(ARC)	EDUCATION	ROCKY MTN STS	6	ROCKY MTNS	6/74- 6/75	1741
609	MMW	WAVE PROP	U. OF TEXAS	6	TEXAS	6/74- 7/79	3271
639	ALL DEMO	DEMO	NASA	6	U.S.	6/74- 7/79	322
602	VHRR RADIOMETER	METEOR.	NASA/GSFC	6	U.S.	6/74- 9/74	360
607	IMORAS	SAT CONTRL	NASA/GSFC	6	U.S.	6/74- 7/75	5
610	INTERFEROMETER	SAT CONTRL	NASA/GSFC	6	U.S.	6/74-11/78	10
604	SAPPSAC	SAT CONTRL	NASA/GSFC	6	U.S.	6/74- 1/75	72
631	ENV MEAS EXP	SCIENTIFIC	NASA/GSFC	6	U.S.	6/74- 7/77	50
609	MMW	WAVE PROP	NASA/GSFC	6	U.S.	6/74- 7/79	3271
601	RADIO FREQ INT.	WAVE PROP	NASA/GSFC	6	U.S.	6/74-12/76	877
606	RADIO BEACON	WAVE PROP	NOAA	6	U.S.	6/74- 7/79	0
658	COMSAT PROP US	WAVE PROP	COMSAT LABS	6	U.S.(EAST)	6/74- 6/78	159
609	MMW	WAVE PROP	COMSAT LABS	6	VIRGINIA	6/74- 7/79	3271
609	MMW	WAVE PROP	VIRGINIA POLY	6	VIRGINIA	6/74- 7/79	3271
609	MMW	WAVE PROP	BATTELLE LAB	6	WASHINGTON	6/74- 7/79	3271
603	RAD ASTRO INTER	WAVE PROP	NASA/GSFC	6	WORLD	6/74- 6/75	9
664	SAR L-BAND C/O	RANGING	BOEING	6	N. ATLANTIC	8/74- 4/75	13
664	SAR L-BAND C/O	RANGING	FAA	6	N. ATLANTIC	8/74- 4/75	13
248	SP L-BAND	CONFERENCE	AII	5	U.S.	8/74- 4/75	135
248	SP L-BAND	DATA TRANS	AII	5	U.S.	8/74- 4/75	135
657	CRC	RANGING	CANADA/CRC	6	CANADA	9/74- 8/77	138
605	PLACE	DATA TRANS	NASA	6	U.S.	9/74- 6/75	967
605	PLACE	RANGING	NASA	6	U.S.	9/74- 6/75	967

• ATS SCHEDULED TIME/CTS ACTUAL TIME

3.7 Sorted by Chronology (cont.)

ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS *
618	TRUST	DATA TRANS	NASA/GSFC	6	U.S.	9/74- 7/75	40
620	GEOS-C	DATA TRANS	NASA/GSFC	6	WORLD	9/74- 7/79	894
617	TDRE	DATA TRANS	NASA/GSFC	6	WORLD	9/74- 7/79	622
620	GEOS-C	SAT CONTRL	NASA/GSFC	6	WORLD	9/74- 7/79	894
617	TDRE	SAT CONTRL	NASA/GSFC	6	WORLD	9/74- 7/79	622
640	APOLLO-SOYUZ	SUPPORT	NASA/HOUSTON	6	WORLD	10/74- 7/75	333
306	VHF DRAKE	SUPPORT	TEXAS A&M	3	ANTARCTICA	1/75- OPEN	428
671	MSH	MEDICAL	MTN STS MTH COR	6	ROCKY MTNS	3/75- 5/75	22
649	MAG FIELD STUDY	SCIENTIFIC	NASA/GSFC	6	U.S.	4/75- 6/75	295
650	MAG DATA	SCIENTIFIC	UCLA	6	U.S.	5/75- 8/76	903
608	PROPAGATION(E)	WAVE PROP	ESTEC	6	EUROPE	8/75-10/76	2263
647	SITE	BROADCAST	INDIA	6	INDIA	8/75- 8/76	2171
647	SITE	EDUCATION	INDIA	6	INDIA	8/75- 8/76	2171
302	NEA	EDUCATION	NAT EDUC ASSOC	1	APPAL/ALASK	1/76- 4/77	39
302	NEA	EDUCATION	NAT EDUC ASSOC	3	APPAL/ALASK	1/76- 4/77	76
331	PLU	BROADCAST	PROJECT LOOK-UP	3	PUERTO RICO	1/76- OPEN	87
331	PLU	EDUCATION	PROJECT LOOK-UP	3	PUERTO RICO	1/76- OPEN	87
660	PLU	BROADCAST	PROJECT LOOK-UP	6	SO.AMERICA	1/76- 7/79	141
660	PLU	EDUCATION	PROJECT LOOK-UP	6	SO.AMERICA	1/76- 7/79	141
CTS-T	TEP/SHF	GRD TERM	NASA/LERC	CTS	OHIO	2/76- OPEN	839
CTS-01	COMM LINK CHAR	WAVE PROP	OHIO STATE U	CTS	OHIO	2/76-12/77	315
CTS-01	COMM LINK CHAR	WAVE PROP	U. OF TEXAS	CTS	TEXAS	2/76-12/77	315
CTS-01	COMM LINK CHAR	WAVE PROP	NASA/GSFC	CTS	U.S.	2/76-12/77	315
CTS-06	TET/COMSAT	GRD TERM	COMSAT LABS	CTS	U.S.(EAST)	2/76- OPEN	266
CTS-15	TELECONFERENCE	CONFERENCE	WESTINGHOUSE	CTS	U.S.(EAST)	2/76- OPEN	286
CTS-04	COLLEGE CURR	EDUCATION	CARLETON UNIV	CTS	U.S./CANADA	2/76- OPEN	446
CTS-04	COLLEGE CURR	EDUCATION	STANFORD UNIV	CTS	U.S./CANADA	2/76- OPEN	446
CTS-01	COMM LINK CHAR	WAVE PROP	VIRGINIA POLY	CTS	VIRGINIA	2/76-12/77	315
309	NSF	SUPPORT	TEXAS A&M	3	ATLANTIC	3/76- 9/76	161
CTS-16	PROJ INTERCHG	EDUCATION	ARCH OF S.F.	CTS	CALIFORNIA	3/76- 6/78	45
638	COMSAT PROP IND	WAVE PROP	COMSAT LABS	6	EUROPE	3/76- 7/76	667
CTS-20	ADV GRD REC EQ	GRD TERM	NASA/GSFC	CTS	U.S.	4/76- 4/78	87
310	VHF DEA	CONFERENCE	DRUG ENF AGY	3	U.S.	4/76- OPEN	131
310	VHF DEA	RANGING	DRUG ENF AGY	3	U.S.	4/76- OPEN	131
310	VHF DEA	CONFERENCE	GE	3	U.S.	4/76- OPEN	131
310	VHF DEA	RANGING	GE	3	U.S.	4/76- OPEN	131
CTS-18	INTRANASA COMM	CONFERENCE	NASA/ARC	CTS	U.S.	5/76- OPEN	382
CTS-18	INTRANASA COMM	CONFERENCE	NASA/GSFC	CTS	U.S.	5/76- OPEN	382
CTS-18	INTRANASA COMM	CONFERENCE	NASA/LERC	CTS	U.S.	5/76- OPEN	382
CTS-24	DICE	DATA TRANS	COMSAT LABS	CTS	U.S.(EAST)	5/76- OPEN	131
312	ALC	CONFERENCE	AMER LUTHERAN C	1	U.S.	6/76- OPEN	219
315	ERDA	DATA TRANS	ERDA	3	PACIFIC	7/76- 8/76	5
315	ERDA	SUPPORT	ERDA	3	PACIFIC	7/76- 8/76	5
311	GSFC	DEMO	NASA/GSFC	3	U.S.(EAST)	7/76- OPEN	1705
CTS-22	ICE FLOW	DATA TRANS	NASA/LERC	CTS	ALASKA	8/76- 9/76	70
623	L-BAND EXP	WAVE PROP	U. OF PA	6	U.S.(EAST)	8/76- 1/77	787
317	LAMONT	SUPPORT	LAMONT/DOHERTY	3	SO. OCEAN	10/76- 3/77	161
316	NSTL	MEDICAL	NAT SP TECH LAB	3	U.S.(SOUTH)	10/76-10/76	71
316	NSTL	MEDICAL	SO REG MED CONS	3	U.S.(SOUTH)	10/76-10/76	71
318	ORI	DATA TRANS	DESERT RES INST	1	ANTARCTICA	12/76- 1/77	10
318	ORI	METEOR.	DESERT RES INST	1	ANTARCTICA	12/76- 1/77	10
318	ORI	DATA TRANS	DESERT RES INST	3	ANTARCTICA	12/76- 1/77	627
318	ORI	METEOR.	DESERT RES INST	3	ANTARCTICA	12/76- 1/77	627
319	SIRIUS	RANGING	BAKER DEV CORP	3	BERMUDA	12/76- 1/77	40
319	SIRIUS	SUPPORT	BAKER DEV CORP	3	BERMUDA	12/76- 1/77	40

* ATS SCHEDULED TIME/CTS ACTUAL TIME

3.7 Sorted by Chronology (cont.)

ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS *
CTS-19	SAT. DIST.	DATA TRANS	SECA	CTS	U.S.(SOUTH)	12/76- OPEN	655
253	SHF VLBI	TIME/FREQ	RADIO RES LABS	1	JAPAN	1/77- 2/77	5
253	SHF VLBI	TIME/FREQ	RADIO RES LABS	3	JAPAN	1/77- 2/77	190
322	WHOI	SUPPORT	WOODS HOLE INST	3	PACIFIC	1/77- 2/77	244
320	SAMOA	EDUCATION	U. SO. PACIFIC	1	SAMOA	1/77- OPEN	258
321	FLTAC	CONFERENCE	DEPT OF NAVY	3	W. HEMIS.	1/77- OPEN	391
CTS-21	PSSC	DEMO	PSSC	CTS	U.S.	2/77- OPEN	284
CTS-21	PSSC	SUPPORT	PSSC	CTS	U.S.	2/77- OPEN	284
324	SIPLE	SUPPORT	STANFORD UNIV	3	W. HEMIS.	2/77- OPEN	1166
CTS-13	DECENT MED ED	EDUCATION	U OF WASHINGTON	CTS	ALASKA/WASH	3/77- OPEN	292
CTS-13	DECENT MED ED	EDUCATION	WAMI	CTS	ALASKA/WASH	3/77- OPEN	292
CTS-13	DECENT MED ED	MEDICAL	WAMI	CTS	ALASKA/WASH	3/77- OPEN	292
CTS-25	CONGRESS	CONFERENCE	GEO WASH UNIV	CTS	MARYLAND	4/77- 8/78	39
325	GYRE	SUPPORT	TEXAS A&M	3	W. HEMIS.	4/77-10/78	315
329	NORPAX	SUPPORT	U. OF CAL/NAVY	1	N. PACIFIC	5/77- 6/77	53
335	VHF SAR SIM	RANGING	BAKER DEV CORP	3	BERMUDA	6/77- 9/77	15
330	MONTANA	SUPPORT	ST. OF MONTANA	3	MONTANA	6/77-11/77	163
CTS-07	BIOMED COMMUN	EDUCATION	LISTER HILL	CTS	U.S.	6/77- OPEN	404
CTS-07	BIOMED COMMUN	MEDICAL	LISTER HILL	CTS	U.S.	6/77- OPEN	404
CTS-24	DICE	DATA TRANS	NASA/LERC	CTS	U.S.(EAST)	6/77- OPEN	131
CTS-11	HEALTH/COMMUN	EDUCATION	VETERANS ADM	CTS	U.S.(WEST)	6/77- OPEN	306
CTS-11	HEALTH/COMMUN	MEDICAL	VETERANS ADM	CTS	U.S.(WEST)	6/77- OPEN	306
332	ENDEAVOR	SUPPORT	U. OF RHODE ISL	3	ATLANTIC	7/77- 1/78	168
668	MOTOROLA	WAVE PROP	MOTOROLA	6	U.S.	7/77- 9/78	47
108	LAUNCH SUPPORT	SUPPORT	NASA	6	U.S.	7/77- 2/78	7
661	ALFE	BROADCAST	PSSC	6	ALASKA	9/77-10/78	1979
661	ALFE	DATA TRANS	PSSC	6	ALASKA	9/77-10/78	1979
667	ALVA	EDUCATION	PSSC	6	ALASKA	9/77- 7/79	69
667	ALVA	MEDICAL	PSSC	6	ALASKA	9/77- 7/79	69
670	TEAM	EDUCATION	MONTANA ST U	6	MONTANA	9/77- 7/79	2
340	SAMOA TV SAMFE	BROADCAST	PSSC	1	SAMOA	9/77- OPEN	53
340	SAMOA TV SAMFE	BROADCAST	PSSC	3	SAMOA	9/77- OPEN	96
672	SAMFE	BROADCAST	PSSC	6	SAMOA	9/77- 2/78	444
666	UHF/NRL	SCIENTIFIC	NAVAL RES LAB	6	U.S.	9/77- 5/78	18
667	ALVA	EDUCATION	PSSC	6	U.S.(WEST)	9/77- 7/79	69
667	ALVA	MEDICAL	PSSC	6	U.S.(WEST)	9/77- 7/79	69
CTS-26	PROJ ADJUNCT	CONFERENCE	SAT BUS SYSTEMS	CTS	VIRGINIA	9/77- 2/78	178
CTS-26	PROJ ADJUNCT	DATA TRANS	SAT BUS SYSTEMS	CTS	VIRGINIA	9/77- 2/78	178
336	ERDA/DOD	SUPPORT	ERDA	1	ENEWETAK	10/77- 9/78	49
CTS-09	SALINET	EDUCATION	SALINET	CTS	U.S.	10/77- 4/78	10
307	VHF OCEAN	SUPPORT	U. OF MIAMI	3	ATLANTIC	12/77- OPEN	2241
338	DISP	CONFERENCE	DEPT OF INTER	1	PACIFIC	12/77- OPEN	1453
674	GE L-BAND	RANGING	GE	6	U.S.(EAST)	12/77- 7/79	573
674	GE L-BAND	SUPPORT	GE	6	U.S.(EAST)	12/77- 7/79	573
673	NIE	EDUCATION	APP. REG. COMM.	6	APPALACHIA	1/78- 7/79	3
333	U. OF W. INDIES	EDUCATION	DEPT OF ST/AID	3	JAMAICA	1/78- 6/78	223
315	ERDA	DATA TRANS	ERDA	1	PACIFIC	1/78- 1/79	146
315	ERDA	SUPPORT	ERDA	1	PACIFIC	1/78- 1/79	146
CTS-30	TER OF TOMORROW	GRD TERM	FCC	CTS	U.S.	3/78-12/78	56
CTS-29	UNIV GRAD STUDY	EDUCATION	VARIAN ASSOC	CTS	U.S.	5/78-12/78	49
CTS-28	VLBI	TIME/FREQ	UNIV OF ILL	CTS	U.S./CANADA	5/78-12/78	120
342	PERU	SUPPORT	ADVENTURES UNL.	3	PERU	6/78- 7/78	46
343	ORANGE	SUPPORT	NAT. SC. FOUND.	3	ANTARCTICA	7/78- 8/78	176
344	BARBADOS	MEDICAL	DEPT OF ST/AID	3	BARBADOS	8/78- 9/78	14
677	IHS	COMPUTER	INDIAN HLTH SER	6	ALASKA	9/78- 7/79	0

* ATS SCHEDULED TIME/CTS ACTUAL TIME

3.7 Sorted by Chronology (cont.)

ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS •
677	IHS	CONFERENCE	INDIAN HLTH SER	6	ALASKA	9/78- 7/79	0
677	IHS	MEDICAL	INDIAN HLTH SER	6	ALASKA	9/78- 7/79	0
663	U. OF W. INDIES	BROADCAST	DEPT OF ST/AID	6	WEST INDIES	10/78- 7/79	66
663	U. OF W. INDIES	EDUCATION	DEPT OF ST/AID	6	WEST INDIES	10/78- 7/79	66
CTS-33	WIDE BAND COMM.	CONFERENCE	GTE LABS	CTS	U.S.	1/79- OPEN	0
CTS-31	3 WAY TIME TRAN	TIME/FREQ	U.S. NAVAL OBS.	CTS	U.S./CANADA	1/79- 7/79	0
CTS-35	CT SCANNING NET	MEDICAL	U. OF COLORADO	CTS	U.S.(WEST)	4/79- 7/79	0
CTS-12	AESP II	EDUCATION	APP. REG. COMM.	CTS	APPALACHIA	PENDING	0
CTS-17	HEALTH ED TV	EDUCATION	ASSOC OF U MDSP	CTS	ROCKY MTNS	PENDING	0
CTS-17	HEALTH ED TV	MEDICAL	ASSOC OF U MDSP	CTS	ROCKY MTNS	PENDING	0
CTS-27	WOMENS SAT SER	CONFERENCE	NAT WOMENS AS	CTS	U.S.	PENDING	0

• ATS SCHEDULED TIME/CTS ACTUAL TIME

3.8 Sorted by Hours

ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS *
210	MSSCC	DATA TRANS	NOAA	3	WORLD	3/69- OPEN	26966
210	MSSCC	METEOR.	NOAA	3	WORLD	3/69- OPEN	26966
227	MET ALASKA	EDUCATION	ST. OF ALASKA	1	ALASKA	6/69- OPEN	11314
227	MET ALASKA	MEDICAL	ST. OF ALASKA	1	ALASKA	6/69- OPEN	11314
227	MET ALASKA	EDUCATION	NAT EDUC ASSOC	1	W. HEMIS.	6/69- OPEN	11314
205	SSCC	DATA TRANS	NOAA	1	WORLD	3/69- OPEN	8372
205	SSCC	METEOR.	NOAA	1	WORLD	3/69- OPEN	8372
235	VHF HAWAII	EDUCATION	PEACESAT	1	PACIFIC	2/72- OPEN	6942
235	VHF HAWAII	MEDICAL	PEACESAT	1	PACIFIC	2/72- OPEN	6942
183	WEFAX	DATA TRANS	NOAA	1	WORLD	3/69- OPEN	5957
183	WEFAX	METEOR.	NOAA	1	WORLD	3/69- OPEN	5957
183	WEFAX	DATA TRANS	NOAA	3	WORLD	3/69- OPEN	3943
183	WEFAX	METEOR.	NOAA	3	WORLD	3/69- OPEN	3943
609	MMW	WAVE PROP	NAVAL RES LAB	6	MARYLAND	6/74- 7/79	3271
609	MMW	WAVE PROP	WESTINGHOUSE	6	MARYLAND	6/74- 7/79	3271
609	MMW	WAVE PROP	ARMY	6	NEW JERSEY	6/74- 7/79	3271
609	MMW	WAVE PROP	BELL LAB	6	NEW JERSEY	6/74- 7/79	3271
609	MMW	WAVE PROP	OHIO STATE U.	6	OHIO	6/74- 7/79	3271
609	MMW	WAVE PROP	U. OF TEXAS	6	TEXAS	6/74- 7/79	3271
609	MMW	WAVE PROP	NASA/GSFC	6	U.S.	6/74- 7/79	3271
609	MMW	WAVE PROP	COMSAT LABS	6	VIRGINIA	6/74- 7/79	3271
609	MMW	WAVE PROP	VIRGINIA POLY	6	VIRGINIA	6/74- 7/79	3271
609	MMW	WAVE PROP	BATTELLE LAB	6	WASHINGTON	6/74- 7/79	3271
297	VHF USP/FIJI	EDUCATION	U. SO. PACIFIC	1	PACIFIC	1/74- OPEN	2667
608	PROPAGATION(E)	WAVE PROP	ESTEC	6	EUROPE	8/75-10/76	2263
307	VHF OCEAN	SUPPORT	U. OF MIAMI	3	ATLANTIC	12/77- OPEN	2241
647	SITE	BROADCAST	INDIA	6	INDIA	8/75- 8/76	2171
647	SITE	EDUCATION	INDIA	6	INDIA	8/75- 8/76	2171
661	ALFE	BROADCAST	PSSC	6	ALASKA	9/77-10/78	1979
661	ALFE	DATA TRANS	PSSC	6	ALASKA	9/77-10/78	1979
107	SPEC SHF	SUPPORT	GE	1	W. HEMIS.	68- 70	1929
294	SP MET	SUPPORT	MET	3	U.S.	1/73- 8/77	1918
244	MMW REG 1	WAVE PROP	NASA/GSFC	5	N. AMERICA	8/69- 9/71	1866
612	MET(ARC)	MEDICAL	INDIAN HLTH SER	6	ALASKA	6/74- 6/75	1741
612	MET(ARC)	EDUCATION	ST. OF ALASKA	6	ALASKA	6/74- 6/75	1741
612	MET(ARC)	EDUCATION	WAMI	6	ALASKA/WASH	6/74- 6/75	1741
612	MET(ARC)	MEDICAL	WAMI	6	ALASKA/WASH	6/74- 6/75	1741
612	MET(ARC)	EDUCATION	APP. REG. COMM.	6	APPALACHIA	6/74- 6/75	1741
612	MET(ARC)	EDUCATION	VETERANS ADM	6	APPALACHIA	6/74- 6/75	1741
612	MET(ARC)	MEDICAL	VETERANS ADM	6	APPALACHIA	6/74- 6/75	1741
612	MET(ARC)	EDUCATION	ROCKY MTN STS	6	ROCKY MTNS	6/74- 6/75	1741
311	GSFC	DEMO	NASA/GSFC	3	U.S.(EAST)	7/76- OPEN	1705
294	SP MET	SUPPORT	MET	1	U.S.	1/73- 8/77	1654
107	SPEC SHF	SUPPORT	GE	3	W. HEMIS.	68- 70	1613
338	DISP	CONFERENCE	DEPT OF INTER	1	PACIFIC	12/77- OPEN	1453
305	VHF ALOHA	COMPUTER	U. OF HAWAII	1	PACIFIC	72- OPEN	1167
324	SIPLE	SUPPORT	STANFORD UNIV	3	W. HEMIS.	2/77- OPEN	1166
211	IDCS	METEOR.	NOAA	3	U.S.	11/67-10/72	1050
211	IDCS	SAT PHOTOS	NOAA	3	U.S.	11/67-10/72	1050
605	PLACE	DATA TRANS	NASA	6	U.S.	9/74- 6/75	967
605	PLACE	RANGING	NASA	6	U.S.	9/74- 6/75	967
108	LAUNCH SUPPORT	SUPPORT	NASA	1	U.S.	1/67- 1/76	930
264	MARAD/AII/PLACE	DATA TRANS	AII	5	WORLD	1/73- OPEN	912
264	MARAD/AII/PLACE	MARITIME	AII	5	WORLD	1/73- OPEN	912
264	MARAD/AII/PLACE	RANGING	AII	5	WORLD	1/73- OPEN	912

* ATS SCHEDULED TIME/CTS ACTUAL TIME

3.8 Sorted by Hours (cont.)

IDB	EXP. NAME	CAT.	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS •
650	MAG DATA	SCIENTIFIC	UCLA	6	U.S.	5/75- 8/76	903
620	GEOS-C	DATA TRANS	NASA/GSFC	6	WORLD	9/74- 7/79	894
620	GEOS-C	SAT CONTRL	NASA/GSFC	6	WORLD	9/74- 7/79	894
601	RADIO FREQ INT.	WAVE PROP	NASA/GSFC	6	U.S.	6/74-12/76	877
CTS-T	TEP/SHF	GRD TERM	NASA/LERC	CTS	OHIO	2/76- OPEN	839
623	L-BAND EXP	WAVE PROP	U. OF PA	6	U.S.(EAST)	8/76- 1/77	787
638	COMSAT PROP IND	WAVE PROP	COMSAT LABS	6	EUROPE	3/76- 7/76	667
CTS-19	SAT. DIST.	DATA TRANS	SECA	CTS	U.S.(SOUTH)	12/76- OPEN	655
318	DRI	DATA TRANS	DESERT RES INST	3	ANTARCTICA	12/76- 1/77	627
318	DRI	METEOR.	DESERT RES INST	3	ANTARCTICA	12/76- 1/77	627
617	TORE	DATA TRANS	NASA/GSFC	6	WORLD	9/74- 7/79	622
617	TORE	SAT CONTRL	NASA/GSFC	6	WORLD	9/74- 7/79	622
282	VHF NLM	COMPUTER	LISTER HILL	1	U.S.(N.W.)	10/71- OPEN	619
282	VHF NLM	MEDICAL	LISTER HILL	1	U.S.(N.W.)	10/71- OPEN	619
674	GE L-BAND	RANGING	GE	6	U.S.(EAST)	12/77- 7/79	573
674	GE L-BAND	SUPPORT	GE	6	U.S.(EAST)	12/77- 7/79	573
251	L-BAND DOT	RANGING	BOEING	5	N. AMERICA	2/71- 7/74	557
286	MET(ARC)	EDUCATION	APP. RES. COMM.	3	APPALACHIA	6/74- OPEN	536
CTS-04	COLLEGE CURR	EDUCATION	CARLETON UNIV	CTS	U.S./CANADA	2/76- OPEN	446
CTS-04	COLLEGE CURR	EDUCATION	STANFORD UNIV	CTS	U.S./CANADA	2/76- OPEN	446
672	SAMFE	BROADCAST	PSSC	6	SAMOA	9/77- 2/78	444
306	VHF DRAKE	SUPPORT	TEXAS A&M	3	ANTARCTICA	1/75- OPEN	428
CTS-07	BIOMED COMMUN	EDUCATION	LISTER HILL	CTS	U.S.	6/77- OPEN	404
CTS-07	BIOMED COMMUN	MEDICAL	LISTER HILL	CTS	U.S.	6/77- OPEN	404
321	FLTAC	CONFERENCE	DEPT OF NAVY	3	W. HEMIS.	1/77- OPEN	391
301	VHF GATE	SUPPORT	NOAA	3	UNKNOWN	1/74- 9/74	388
CTS-18	INTRANASA COMM	CONFERENCE	NASA/ARC	CTS	U.S.	5/76- OPEN	382
CTS-18	INTRANASA COMM	CONFERENCE	NASA/GSFC	CTS	U.S.	5/76- OPEN	382
CTS-18	INTRANASA COMM	CONFERENCE	NASA/LERC	CTS	U.S.	5/76- OPEN	382
108	LAUNCH SUPPORT	SUPPORT	NASA	3	U.S.	1/67- 8/76	369
602	VHRR RADIOMETER	METEOR.	NASA/GSFC	6	U.S.	6/74- 9/74	360
289	VHF CALYPSO	DATA TRANS	COUSTEAU GROUP	3	ANTARCTICA	6/72- 1/76	358
289	VHF CALYPSO	SUPPORT	COUSTEAU GROUP	3	ANTARCTICA	6/72- 1/76	358
292	VHF CLIPPER	SUPPORT	WOODY COLLEGE	3	ATLANTIC	6/73- 8/77	342
292	VHF CLIPPER	SUPPORT	TEXAS A&M	3	ATLANTIC	6/73- 8/77	342
640	APOLLO-SOYUZ	SUPPORT	NASA/HOUSTON	6	WORLD	10/74- 7/75	333
238	VHF NBS	TIME/FREQ	NAT BUR OF STDS	3	W. HEMIS.	8/71- 8/72	327
245	MMW REG 2	WAVE PROP	NASA/GSFC	5	N. AMERICA	8/69- 9/71	326
639	ALL DEMO	DEMO	NASA	6	U.S.	6/74- 7/79	322
CTS-01	COMM LINK CHAR	WAVE PROP	OHIO STATE U	CTS	OHIO	2/76-12/77	315
CTS-01	COMM LINK CHAR	WAVE PROP	U. OF TEXAS	CTS	TEXAS	2/76-12/77	315
CTS-01	COMM LINK CHAR	WAVE PROP	NASA/GSFC	CTS	U.S.	2/76-12/77	315
CTS-01	COMM LINK CHAR	WAVE PROP	VIRGINIA POLY	CTS	VIRGINIA	2/76-12/77	315
325	GYRE	SUPPORT	TEXAS A&M	3	W. HEMIS.	9/77-10/78	315
185	VHF A/C	A/C COMM	ARINC	3	U.S.	1/67- 6/70	308
CTS-11	HEALTH/COMMUN	EDUCATION	VETERANS ADM	CTS	U.S.(WEST)	6/77- OPEN	306
CTS-11	HEALTH/COMMUN	MEDICAL	VETERANS ADM	CTS	U.S.(WEST)	6/77- OPEN	306
649	MAG FIELD STUDY	SCIENTIFIC	NASA/GSFC	6	U.S.	4/75- 6/75	295
CTS-13	DECENT MED ED	EDUCATION	U OF WASHINGTON	CTS	ALASKA/WASH	3/77- OPEN	292
CTS-13	DECENT MED ED	EDUCATION	WAMI	CTS	ALASKA/WASH	3/77- OPEN	292
CTS-13	DECENT MED ED	MEDICAL	WAMI	CTS	ALASKA/WASH	3/77- OPEN	292
CTS-15	TELECONFERENCE	CONFERENCE	WESTINGHOUSE	CTS	U.S.(EAST)	2/76- OPEN	286
CTS-21	PSSC	DEMO	PSSC	CTS	U.S.	2/77- OPEN	284
CTS-21	PSSC	SUPPORT	PSSC	CTS	U.S.	2/77- OPEN	284
252	L-BAND FAA	RANGING	BOEING	5	N. AMERICA	4/71- 4/72	275

• ATS SCHEDULED TIME/CTS ACTUAL TIME

3.8 Sorted by Hours (cont.)

ID#	EXP. NAME	CAT.	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS *
252	L-BAND FAA	RANGING	FAA	5	N. AMERICA	4/71- 4/72	275
202	S/C SUPPORT	SUPPORT	NASA	1	W. HEMIS.	4/69- 70	270
CTS-06	TET/COMSAT	GRD TERM	COMSAT LABS	CTS	U.S.(EAST)	2/76- OPEN	266
226	VHF NETHERLAND	MARITIME	NETHERLANDS	3	ATLANTIC	8/70-12/71	265
261	LOS ALAMOS	A/C COMM	E&G	1	W. HEMIS.	10/70-10/71	265
185	VHF A/C	A/C COMM	ARINC	1	U.S.	1/67- 6/70	264
320	SAMOA	EDUCATION	U. SO. PACIFIC	1	SAMOA	1/77- OPEN	258
322	WHOI	SUPPORT	WOODS HOLE INST	3	PACIFIC	1/77- 2/77	244
295	VHF NIAID	MEDICAL	NIAID	1	PACIFIC	10/73- OPEN	237
265	VANGUARD	RANGING	USCG	5	ATLANTIC	3/72- 4/73	232
265	VANGUARD	RANGING	USCG	5	PACIFIC	3/72- 4/73	232
333	U. OF W. INDIES	EDUCATION	DEPT OF ST/AID	3	JAMAICA	1/78- 6/78	223
312	ALC	CONFERENCE	AMER LUTHERAN C	1	U.S.	6/76- OPEN	219
225	VHF ENGLAND	MARITIME	UNITED KINDGOM	3	ATLANTIC	8/70-12/70	191
283	SHF VLBI	TIME/FREQ	SMITHSONIAN INS	3	U.S.	5/71-10/72	190
253	SHF VLBI	TIME/FREQ	RADIO RES LABS	3	JAPAN	1/77- 2/77	190
293	GE/EXXON	DATA TRANS	GE & EXXON	3	ATLANTIC	7/73- 2/74	186
293	GE/EXXON	MARITIME	GE & EXXON	3	ATLANTIC	7/73- 2/74	186
293	GE/EXXON	RANGING	GE & EXXON	3	ATLANTIC	7/73- 2/74	186
CTS-26	PROJ ADJUNCT	CONFERENCE	SAT BUS SYSTEMS	CTS	VIRGINIA	9/77- 2/78	178
CTS-26	PROJ ADJUNCT	DATA TRANS	SAT BUS SYSTEMS	CTS	VIRGINIA	9/77- 2/78	178
230	VHF B/ION	SUPPORT	MAX PLANCK INST	3	W. HEMIS.	3/71- 9/71	176
230	VHF B/ION	SUPPORT	NASA/WALLOPS	3	W. HEMIS.	3/71- 9/71	176
343	ORANGE	SUPPORT	NAT. SC. FOUND.	3	ANTARCTICA	7/78- 8/78	176
268	L-BAND TRILAT	RANGING	GE	5	U.S.	1/74- 1/76	172
332	ENDEAVOR	SUPPORT	U. OF RHODE ISL	3	ATLANTIC	7/77- 1/78	168
330	MONTANA	SUPPORT	ST. OF MONTANA	3	MONTANA	6/77-11/77	163
309	NSF	SUPPORT	TEXAS A&M	3	ATLANTIC	3/76- 9/76	161
317	LAMONT	SUPPORT	LAMONT/DOHERTY	3	SO. OCEAN	10/76- 3/77	161
658	COMSAT PROP US	WAVE PROP	COMSAT LABS	6	U.S.(EAST)	6/74- 6/78	159
304	VHF OPN	TIME/FREQ	RADIO RES LABS	1	JAPAN	67- OPEN	158
261	GE L-BAND	RANGING	GE	5	N. AMERICA	6/70- 6/73	152
315	ERDA	DATA TRANS	ERDA	1	PACIFIC	1/78- 1/79	146
315	ERDA	SUPPORT	ERDA	1	PACIFIC	1/78- 1/79	146
228	VHF GE	DATA TRANS	GE	3	BERMUDA	2/69- 8/71	142
228	VHF GE	MARITIME	GE	3	BERMUDA	2/69- 8/71	142
228	VHF GE	RANGING	GE	3	BERMUDA	2/69- 8/71	142
660	PLU	BROADCAST	PROJECT LOOK-UP	6	SO.AMERICA	1/76- 7/79	141
660	PLU	EDUCATION	PROJECT LOOK-UP	6	SO.AMERICA	1/76- 7/79	141
285	VHF STANFORD	EDUCATION	STANFORD UNIV	3	U.S.(WEST)	5/71- 6/72	139
657	CRC	RANGING	CANADA/CRC	6	CANADA	9/74- 8/77	138
263	TELESAT	WAVE PROP	TELESAT CANADA	1	CANADA	9/72- 9/72	136
248	SP L-BAND	CONFERENCE	AII	5	U.S.	8/74- 4/75	135
248	SP L-BAND	DATA TRANS	AII	5	U.S.	8/74- 4/75	135
264	MARAD/AII/PLACE	DATA TRANS	AII	3	WORLD	1/73- OPEN	131
264	MARAD/AII/PLACE	MARITIME	AII	3	WORLD	1/73- OPEN	131
310	VHF DEA	CONFERENCE	DRUG ENF AGY	3	U.S.	4/76- OPEN	131
310	VHF DEA	RANGING	DRUG ENF AGY	3	U.S.	4/76- OPEN	131
310	VHF DEA	CONFERENCE	GE	3	U.S.	4/76- OPEN	131
310	VHF DEA	RANGING	GE	3	U.S.	4/76- OPEN	131
CTS-24	DICE	DATA TRANS	COMSAT LABS	CTS	U.S.(EAST)	5/76- OPEN	131
CTS-24	DICE	DATA TRANS	NASA/LERC	CTS	U.S.(EAST)	6/77- OPEN	131
251	L-BAND DOT	DATA TRANS	BOEING	3	N. AMERICA	4/74-10/76	128
CTS-28	VLBI	TIME/FREQ	UNIV OF ILL	CTS	U.S./CANADA	5/78-12/78	120
260	CRC C/L-BAND	WAVE PROP	CANADA	5	CANADA	9/71- 5/72	113

* ATS SCHEDULED TIME/CTS ACTUAL TIME

3.8 Sorted by Hours (cont.)

ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS	*
610	INTERFEROMETER	SAT CONTRL	NASA/GSFC	6	U.S.	6/74-11/78	104	
250	L-BAND RANGING	RANGING	WESTINGHOUSE	5	U.S.(WEST)	2/71- 5/71	99	
265	VANGUARD	DATA TRANS	USCG	3	ATLANTIC	3/72- 4/73	98	
265	VANGUARD	DATA TRANS	USCG	2	PACIFIC	3/72- 4/73	98	
268	L-BAND TRILAT	RANGING	GE	3	U.S.	1/74- 1/76	98	
340	SAMOA TV SAMFE	BROADCAST	PSSC	3	SAMOA	9/77- OPEN	96	
293	GE/EXXON	DATA TRANS	GE & EXXON	1	ATLANTIC	7/73- 2/74	90	
293	GE/EXXON	MARITIME	GE & EXXON	1	ATLANTIC	7/73- 2/74	90	
293	GE/EXXON	RANGING	GE & EXXON	1	ATLANTIC	7/73- 2/74	90	
247	ALPHA-2	RANGING	AII	5	ATLANTIC	7/70- 2/71	88	
247	ALPHA-2	RANGING	USAF/SAMSO	5	ATLANTIC	7/70- 2/71	88	
331	PLU	BROADCAST	PROJECT LOOK-UP	3	PUERTO RICO	1/76- OPEN	87	
331	PLU	EDUCATION	PROJECT LOOK-UP	3	PUERTO RICO	1/76- OPEN	87	
CTS-20	ADV GRD REC EQ	GRD TERM	NASA/GSFC	CTS	U.S.	4/76- 4/78	87	
257	SHF CRC	WAVE PROP	CANADA/CRC	1	CANADA	1/71-12/71	76	
302	NEA	EDUCATION	NAT EDUC ASSOC	3	APPAL/ALASK	1/76- 4/77	76	
604	SAPPSAC	SAT CONTRL	NASA/GSFC	6	U.S.	6/74- 1/75	72	
316	NSTL	MEDICAL	NAT SP TECH LAB	3	U.S.(SOUTH)	10/76-10/76	71	
316	NSTL	MEDICAL	SO REG MED CONS	3	U.S.(SOUTH)	10/76-10/76	71	
CTS-22	ICE FLOW	DATA TRANS	NASA/LERC	CTS	ALASKA	8/76- 9/76	70	
108	LAUNCH SUPPORT	SUPPORT	NASA	5	U.S.	3/67-10/72	69	
667	ALVA	EDUCATION	PSSC	6	ALASKA	9/77- 7/79	69	
667	ALVA	MEDICAL	PSSC	6	ALASKA	9/77- 7/79	69	
667	ALVA	EDUCATION	PSSC	6	U.S.(WEST)	9/77- 7/79	69	
667	ALVA	MEDICAL	PSSC	6	U.S.(WEST)	9/77- 7/79	69	
256	SHF SEARCH	LAW ENFORC	PUBLIC SYST INC	1	U.S.	12/71-12/71	68	
663	U. OF W. INDIES	BROADCAST	DEPT OF ST/AID	6	WEST INDIES	10/78- 7/79	66	
663	U. OF W. INDIES	EDUCATION	DEPT OF ST/AID	6	WEST INDIES	10/78- 7/79	66	
249	MARAD	DATA TRANS	AII	5	W. HEMIS.	3/70-12/71	65	
249	MARAD	MARITIME	AII	5	W. HEMIS.	3/70-12/71	65	
249	MARAD	RANGING	AII	5	W. HEMIS.	3/70-12/71	65	
249	MARAD	DATA TRANS	MARAD	5	W. HEMIS.	3/70-12/71	65	
249	MARAD	MARITIME	MARAD	5	W. HEMIS.	3/70-12/71	65	
291	VHF ZURITA	SUPPORT	AEC	1	ALASKA/HAW.	6/73-12/73	62	
CTS-30	TER OF TOMORROW	GRD TERM	FCC	CTS	U.S.	3/78-12/78	56	
102	DATA XMISSION	MEDICAL	DUKE U. MED CEN	1	U.S.(EAST)	11/71-11/71	54	
329	NORPAX	SUPPORT	U. OF CAL/NAVY	1	N. PACIFIC	5/77- 6/77	53	
340	SAMOA TV SAMFE	BROADCAST	PSSC	1	SAMOA	9/77- OPEN	53	
261	GE L-BAND	RANGING	GE	3	N. AMERICA	6/70-10/72	51	
631	ENV MEAS EXP	SCIENTIFIC	NASA/GSFC	6	U.S.	6/74- 7/77	50	
336	ERDA/DOD	SUPPORT	ERDA	1	ENEWETAK	10/77- 9/78	49	
CTS-29	UNIV GRAD STUDY	EDUCATION	VARIAN ASSOC	CTS	U.S.	5/78-12/78	49	
232	VHF EG&G	A/C COMM	EG&G	1	W. HEMIS.	6/68-10/72	48	
232	VHF EG&G	SUPPORT	EG&G	1	W. HEMIS.	6/68-10/72	48	
668	MOTOROLA	WAVE PROP	MOTOROLA	6	U.S.	7/77- 9/78	47	
288	GE/MARAD	DATA TRANS	GE	3	ATLANTIC	4/72- 5/72	46	
288	GE/MARAD	MARITIME	GE	3	ATLANTIC	4/72- 5/72	46	
288	GE/MARAD	RANGING	GE	3	ATLANTIC	4/72- 5/72	46	
342	PERU	SUPPORT	ADVENTURES UNL.	3	PERU	6/78- 7/78	46	
CTS-16	PROJ INTERCHG	EDUCATION	ARCH OF S.F.	CTS	CALIFORNIA	3/76- 6/78	45	
234	GE/FAA	RANGING	GE	3	N. ATLANTIC	11/69- 6/71	44	
290	VHF BERING SEA	SUPPORT	US/USSR	1	BERING SEA	12/72- 3/73	43	
228	VHF GE	DATA TRANS	GE	1	BERMUDA	2/69- 8/71	41	
228	VHF GE	MARITIME	GE	1	BERMUDA	2/69- 8/71	41	
228	VHF GE	RANGING	GE	1	BERMUDA	2/69- 8/71	41	

* ATS SCHEDULED TIME/CTS ACTUAL TIME

3.8 Sorted by Hours (cont.)

ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS *
618	TRUST	DATA TRANS	NASA/GSFC	6	U.S.	9/74- 7/75	40
319	SIRIUS	RANGING	BAKER DEV CORP	3	BERMUDA	12/76- 1/77	40
319	SIRIUS	SUPPORT	BAKER DEV CORP	3	BERMUDA	12/76- 1/77	40
302	NEA	EDUCATION	NAT EDUC ASSOC	1	APPAL/ALASK	1/76- 4/77	39
CTS-25	CONGRESS	CONFERENCE	GEO WASH UNIV	CTS	MARYLAND	4/77- 8/78	39
236	VHF BRAZIL	EDUCATION	STANFORD UNIV	3	W. HEMIS.	2/70- OPEN	38
259	COMSAT C/L PROP	WAVE PROP	COMSAT LABS	5	W. HEMIS.	1/72- 4/72	37
239	VHF VANGUARD	CONFERENCE	USCG	3	ATLANTIC	6/68-10/74	28
239	VHF VANGUARD	DATA TRANS	USCG	3	ATLANTIC	6/68-10/74	28
231	VHF MSFN PROP	WAVE PROP	MSFN NETWORK	3	W. HEMIS.	9/70- 2/71	22
233	VHF NORWAY	METEOR.	NORWAY	3	N. ATLANTIC	11/70- 2/71	22
233	VHF NORWAY	RANGING	NORWAY	3	N. ATLANTIC	11/70- 2/71	22
671	MSH	MEDICAL	MTN STS MTH COR	6	ROCKY MTNS	3/75- 5/75	22
205	SSCC	DATA TRANS	NOAA	3	WORLD	3/69- OPEN	20
205	SSCC	METEOR.	NOAA	3	WORLD	3/69- OPEN	20
268	L-BAND TRILAT	RANGING	GE	1	U.S.	1/74- 1/76	19
666	UHF/NRL	SCIENTIFIC	NAVAL RES LAB	6	U.S.	9/77- 5/78	18
283	VHF UCLA	EDUCATION	TRW	3	U.S.(WEST)	9/71-10/71	15
283	VHF UCLA	EDUCATION	UCLA	3	U.S.(WEST)	9/71-10/71	15
335	VHF SAR SIM	RANGING	BAKER DEV CORP	3	BERMUDA	6/77- 9/77	15
344	BARBADOS	MEDICAL	DEPT OF ST/AID	3	BARBADOS	8/78- 9/78	14
664	SAR L-BAND C/O	RANGING	BOEING	6	N. ATLANTIC	8/74- 4/75	13
664	SAR L-BAND C/O	RANGING	FAA	6	N. ATLANTIC	8/74- 4/75	13
239	VHF VANGUARD	CONFERENCE	USCG	1	ATLANTIC	6/68- 7/69	12
239	VHF VANGUARD	DATA TRANS	USCG	1	ATLANTIC	6/68- 7/69	12
318	DRI	DATA TRANS	DESERT RES INST	1	ANTARCTICA	12/76- 1/77	10
318	DRI	METEOR.	DESERT RES INST	1	ANTARCTICA	12/76- 1/77	10
CTS-09	SALINET	EDUCATION	SALINET	CTS	U.S.	10/77- 4/78	10
287	VHF SEEK	METEOR.	SIERRA RES CORP	3	U.S.	1/72-12/72	9
603	RAD ASTRO INTER	WAVE PROP	NASA/GSFC	6	WORLD	6/74- 6/75	9
210	MSSCC	DATA TRANS	NOAA	1	WORLD	3/69- 6/72	7
210	MSSCC	METEOR.	NOAA	1	WORLD	3/69- 6/72	7
288	GE/MARAD	DATA TRANS	GE	1	ATLANTIC	4/72- 5/72	7
288	GE/MARAD	MARITIME	GE	1	ATLANTIC	4/72- 5/72	7
288	GE/MARAD	RANGING	GE	1	ATLANTIC	4/72- 5/72	7
108	LAUNCH SUPPORT	SUPPORT	NASA	6	U.S.	7/77- 2/78	7
250	L-BAND RANGING	RANGING	WESTINGHOUSE	1	U.S.(WEST)	2/71- 5/71	6
CTS-33	WIDE BAND COMM.	CONFERENCE	GTE LABS	CTS	U.S.	1/79- OPEN	6
284	VHF HIGH NOTE	RANGING	SANDIA/AEC	1	U.S.	3/71- 6/72	5
284	VHF HIGH NOTE	RANGING	SANDIA/AEC	3	U.S.	3/71- 6/72	5
607	IHORAS	SAT CONTRL	NASA/GSFC	6	U.S.	6/74- 7/75	5
315	ERDA	DATA TRANS	ERDA	3	PACIFIC	7/76- 8/76	5
315	ERDA	SUPPORT	ERDA	3	PACIFIC	7/76- 8/76	5
253	SHF VLBI	TIME/FREQ	RADIO RES LABS	1	JAPAN	1/77- 2/77	5
234	GE/FAA	RANGING	GE	1	N. ATLANTIC	11/69- 6/71	4
292	VHF CLIPPER	SUPPORT	MOODY COLLEGE	1	ATLANTIC	7/73- 8/77	4
673	NIE	EDUCATION	APP. REG. COMM.	6	APPALACHIA	1/78- 7/79	3
253	SHF VLBI	TIME/FREQ	SMITHSONIAN INS	1	U.S.	5/71-10/72	2
285	VHF STANFORD	EDUCATION	STANFORD UNIV	1	U.S.(WEST)	5/71- 6/72	2
300	VHF IHCHIS	MEDICAL	IHCHIS	1	ALASKA	5/74- 5/74	2
670	TEAM	EDUCATION	MONTANA ST U	6	MONTANA	9/77- 7/79	2
261	GE L-BAND	RANGING	GE	1	N. AMERICA	6/70-10/72	1
246	SSRA	RANGING	WESTINGHOUSE	5	U.S.(WEST)	4/71- 5/71	1
250	L-BAND RANGING	RANGING	WESTINGHOUSE	3	U.S.(WEST)	2/71- 5/71	0
253	SHF VLBI	TIME/FREQ	SMITHSONIAN INS	5	U.S.	5/71-10/72	0

* ATS SCHEDULED TIME/CTS ACTUAL TIME

3.8 Sorted by Hours (cont.)

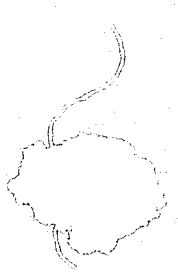
ID#	EXP. NAME	CAT	EXPERIMENTER	SAT	LOCATION	CHRONOLOGY	HRS *
606	RADIO BEACON	WAVE PROP	NOAA	6	EUROPE	6/74- 7/79	0
606	RADIO BEACON	WAVE PROP	NOAA	6	U.S.	6/74- 7/79	0
677	IHS	COMPUTER	INDIAN HLTH SER	6	ALASKA	9/78- 7/79	0
677	IHS	CONFERENCE	INDIAN HLTH SER	6	ALASKA	9/78- 7/79	0
677	IHS	MEDICAL	INDIAN HLTH SER	6	ALASKA	9/78- 7/79	0
CTS-31	3 WAY TIME TRAN	TIME/FREQ	U.S. NAVAL OBS.	CTS	U.S./CANADA	1/79- 7/79	0
CTS-35	CT SCANNING NET	MEDICAL	U. OF COLORADO	CTS	U.S.(WEST)	4/79- 7/79	0
CTS-12	AESP II	EDUCATION	APP. REG. COMM.	CTS	APPALACHIA	PENDING	0
CTS-17	HEALTH ED TV	EDUCATION	ASSOC OF U HOSP	CTS	ROCKY MTNS	PENDING	0
CTS-17	HEALTH ED TV	MEDICAL	ASSOC OF U HOSP	CTS	ROCKY MTNS	PENDING	0
CTS-27	WOMENS SAT SER	CONFERENCE	NAT WOMENS AS	CTS	U.S.	PENDING	0

* ATS SCHEDULED TIME/CTS ACTUAL TIME

SECTION 4

ATS/CTS EXPERIMENT BY STATES, REGIONS OCEANS AND FOREIGN COUNTRIES

For further satellite planning as well as for evaluation of past satellite programs it is important to know which geographical regions were served by the ATS and CTS programs. This section contains a listing of the states in which the experiments were conducted. In some instances, the experiment took place over a geographical region, an ocean and/or a foreign country. This information is also given.



4.1 ATS-CTS EXPERIMENTS BY STATE

ALABAMA	C-19
ALASKA	227, 232, 281, 291, 295, 300, 302, 305, 315, 329, 612, 661, 667, 677, CTS-7 CTS-13, CTS-22
ARIZONA	612, CTS-11
ARKANSAS	None
CALIFORNIA	231, 234, 236, 253, 258, 282, 283, 285, 305, 329, 343, 650, CTS-4, CTS-4A, CTS-11, CTS-16, CTS-18, CTS-20, CTS-21, CTS-27, CTS-28, CTS-29
COLORADO	238, 283, 287, 612, 671, CTS-7, CTS-11, CTS-21, CTS-35
CONNECTICUT	None
DELAWARE	None
DISTRICT of COLUMBIA	259, 338, CTS-20, CTS-25, CTS-27
FLORIDA	258, 307, CTS-20
GEORGIA	CTS-19
HAWAII	235, 291, 295, 297, 305, 315, 320
IDAHO	612, CTS-11
ILLINOIS	606, 668, CTS-27
INDIANA	None
IOWA	None
KANSAS	None
KENTUCKY	612, 673, CTS-7, CTS-19
LOUISIANA	None
MAINE	None
MARYLAND	609, 658, CTS-1, CTS-6, CTS-7, CTS-15, CTS-18, CTS-19, CTS-20, CTS-24

4.1 ATS-CTS EXPERIMENTS BY STATE (CONT'D)

MASSACHUSETTS	CTS-1, CTS-29
MICHIGAN	None
MINNESOTA	312, 631
MISSISSIPPI	316, CTS-19
MISSOURI	CTS-19
MONTANA	330, 612, 670, 671, CTS-7, CTS-11 CTS-13
NEBRASKA	None
NEVADA	285, 287, 315, 318, 336, 612, CTS-11
NEW HAMPSHIRE	None
NEW JERSEY	247, 249, 609
NEW MEXICO	285, 612, CTS-11
NEW YORK	234, 248, 288, 293, 317, 338, 674, CTS-27
NORTH CAROLINA	102, 230, 231, 244, 245, 248, 252, 264, 321, 609, CTS-1
NORTH DAKOTA	None
OHIO	609, 612, 673, CTS-TEP, CTS-1, CTS-15, CTS-18, CTS-20, CTS-22, CTS-24, CTS-30
OKLAHOMA	CTS-19
OREGON	CTS-4A, CTS-11
PENNSYLVANIA	612, 623, 673
RHODE ISLAND	332
SOUTH CAROLINA	CTS-19
SOUTH DAKOTA	None
TENNESSEE	612, 673, CTS-19

4.1 ATS-CTS EXPERIMENTS BY STATE (CONT'D)

TEXAS	249, 306, 309, 325, 609, CTS-1 CTS-19, CTS-27
UTAH	612, CTS-11
VERMONT	None
VIRGINIA	321, 609, CTS-1, CTS-19, CTS-20, CTS-26
WASHINGTON	282, 609, 612, CTS-7, CTS-11, CTS-13
WEST VIRGINIA	612, 673, CTS-28
WISCONSIN	282
WYOMING	612, CTS-11

4.2 ATS-CTS EXPERIMENTS BY REGION

APPALACHIA	286, 612, 673, CTS-12
ANTARCTICA	289, 306, 317, 318, 324, 343
ARCTIC OCEAN	249, CTS-22
ATLANTIC OCEAN	107, 185, 225, 226, 247, 249, 252, 264, 265 288, 292, 293, 307, 309, 317, 325, 332, 664
BARBADOS	333, 344
BERING SEA	290
BRAZIL	236, 259, 302
CANADA	230, 244, 245, 252, 257, 260, 263, 324, 657, CTS-4, CTS-31
CARIBBEAN	228, 292, 319, 325
CHILE	230
EASTERN U.S.	102, 310
ENGLAND	225
ENEWETAK	336
FIJI ISLANDS	297
GERMANY	606
GREECE	321
GULF OF MEXICO	325
GULF STREAM	332
INDIA	606, 647
JAMAICA	333
JAPAN	304, 321
NETHERLANDS	226
NEW ZEALAND	232, 281
NEWFOUNDLAND	234

4.2 ATS-CTS EXPERIMENTS BY REGION (CONT'D)

NORWAY	233
PACIFIC NORTHWEST	282
PACIFIC OCEAN	107, 185, 231, 235, 264, 288, 295, 297, 305, 307, 315, 322, 329
PERU	230, 342
PHILIPPINES	321
PUERTO RICO	331, 660
ROCKY MOUNTAIN STATES	294, 671, CTS-17
SAMOA	320, 672
SOUTHERN OCEAN	306, 317
SOUTHERN U.S.A.	316, CTS-19
TRUST TERRITORY	338
U.S.	108, 185, 211, 253, 268, 284, 295, 301, 312, 601, 602, 604, 605, 606, 618, 631, 664, 666, 668, 674, CTS-7, CTS-21, CTS-25, CTS-27, CTS-31, CTS-33
U.S. VIRGIN ISLANDS	331, 660
WEST COAST U.S.A.	246, 250, 310, CTS-11
WEST INDIES	663
WESTERN EUROPE	608, 638
WESTERN HEMISPHERE	202, 229, 236, 238, 249, 259, 261, 281, 315, 321, 617, CTS-28
WESTERN U.S.A.	CTS-11, CTS-35
WORLD	183, 205, 210, 321, 603

SECTION 5
UNITED STATES CTS DEMONSTRATIONS

An important part of both the ATS and CTS projects, was the demonstrations given utilizing these satellites. A demonstration differs from an experiment usually by length of time. A demonstration generally takes place over part of a day whereas an experiment generally lasts for many days, even years. Demonstrations are important because they demonstrate a capability and for this reason should be archived. This section lists the United States demonstrations of the CTS satellite. Unfortunately, no similar data exists for the ATS program.

UNITED STATES CTS DEMONSTRATIONS

NO.	DATE	EVENT	DEMO. REQ. NO.	EXPERIMENT	LOCATION
	1976				
1	5/6	IEEE Joint Meeting		15	Balt., MD/Lima, OH
2	5/10-5/21	Kalamazoo Bicentennial		L18/TET	Kalamazoo, MI
3	5/20	CTS Inaug. & Christening		CRC/LeRC	Ottawa, Canada/Cleve., OH
4	6/14	Inter. Comm. Conf., 1976		18/CRC	Phila., PA
5	6/16	Conference on Open Learning		21,18	Lincoln, NE
6	6/23	Paramp Review		15,L18	Balt., MD/Cleve., OH
7	7/4	The Glorious Fourth		6,LeRC,NBC	Yellowstone Pk, WY
8	7/10	Scottish Games		19,(6)	Columbia, SC
9	8/3-8/14	Public Communication		L18/TET	Chicago Sci. Museum, IL
10	8/25	Public Communication		L18	Barrow, AK
11	10/29	Grade School		L18/TET	Pecatonica, IL
12	11/1-11/12	Public Communication		L18/TET	Rockford, IL
13	11/17	U.S. User Mtg. 16		L18/15	Cleve., OH/Balt., MD
14	12/7	N.Y.C. Board of Education	1	G18	New York City, NY
	1977				
15	1/25	Moot Court		15	U. of MD/OH Northern U., OH
16	1/27	NASA Conference		G18	Mt. View, CA/Greenbelt, MD
17	1/29	Legal Contin. Educ. Sem.	13	A18	Hastings Coll., CA
18	2/8	U.S. User Meeting 17		L18,A18,4	Cleve., OH/Mt. View, CA
19	3/1	Mayors Conference	16	21/PET	Wash., DC/San Jose, CA
20	3/3-3/10	Crisis Management	14	L18/PET	Syracuse U., NY/Canada
21	3/12	Symposium	12	A18	Mt. View, CA/ Greenbelt, MD
22	3/15-3/17	EEO Spacemobile		L18/TET	Cleve., OH/Chicago, IL
23	3/24	Viking Presentation		L18/CRC	Cleve., OH/Ottawa, Canada
24	3/31	Rural Health Conference		13/PET	Seattle, WA/Bethesda, MD
25	4/13	Exceptional Children Conv.		21/PET	Atlanta, GA

UNITED STATES CTS DEMONSTRATIONS

NO.	DATE	EVENT	DEMO. REQ. NO.	EXPERIMENT	LOCATION
	1977				
26	4/19-4/21	Annual SECA Conference		19/TET	Gulf Shores, AL
27	5/23	Health Science Conference		21/TET	Indiana U., IN/Balt., MD
28	5/25	U.S. User Mtg. 18		L18/G18	Cleve., OH,/Greenbelt, MD
29	6/1	Special Education Conf.	34	21/TET	U. Kentucky, KY
30	6/9-6/10	International Symposium	46	4	Mt. View, CA/Montreal, CN
31	6/10-6/15	Employment Conference	42	G18,I,II	Hot Sp., AR/Albany, NY
32	6/17	PSSC Workshop	36	21/II	Vail, CO
33	7/7-7/19	Medical Workshop	39	21/PET/TET	U. Alabama, AL
34	7/21	NOAA Conference	44	21	MD/CO/Seattle, WA
35	7/25-7/26	Disaster Relief-Johnstown		6	Johnstown, PA
36	7/31-8/9	Boy Scout Jamboree	49	20	Moraine Pk., PA
37	8/4	Co-op Conference	19	18	Greenbelt, MD/Mt. View, CA
38	8/23	Governors Conference	5	13/PET	ID/MT/WA/AK
39	8/23-9/6	Medical Clinics	6-11	13/PET	ID/MT/WA
40	8/30	Am. Hospital Convention	32	21/TET	Atlanta, GA
41	9/11	SEND/RECEIVE Sat. Demo.	56	21/A18	NYC/ARC
42	9/27	U.S. User Mtg. 19		L18/13	Cleve., OH/Seattle, WA
43	9/27	Rehabilitation Conference	47	21/TET	WA/VA/SECA
44	10/9	Intelcom 77-Medical Seminar	55	7/PET	Atlanta, GA
45	10/10	Intelcom 77-Plenary Session	50	G18/PET	Atlanta, GA
46	10/10	Intelcom 77-Educ. Session	51	G18/PET	Atlanta, GA
47	10/11	Intelcom 77-Canad. Transm.	64	PROJ/PET	Atlanta, GA
48	10/14	American Dietetic Assoc.	61	21	Bethesda, MD
49	10/28	Bureau of Reclamation	58	21	Edna, TX
50	11/7	Medical Center	65	G18	Hershey, PA
51	11/20-11/23	Satellite Arts Project	38	G18	GSFC, MD/ARC, CA
52	11/21	Social Work Symposium	69	21	San Diego, CA/Appalac.
53	12/12	AMA Sci. Meeting	59	11/PET	Miami Beach, FL

UNITED STATES CTS DEMONSTRATIONS

NO.	DATE	EVENT	DEMO. REQ. NO.	EXPERIMENT	LOCATION
	1978				
54	1/10-1/22	Health Education Program	21	21/PET	Charleston, SC
55	1/13	Teleconference Demo.	73	21	Ottawa, Canada/Menlo Pk., CA
56	1/28-1/29	Continuing Medical Education	66	21/PET	Birmingham, AL
57	1/7	Stereo Simulcast	67	19/PET	Columbia, SC/SECA Network
58	2/2	Explorer-20 yr. anniv.	84	L18/TET	Huntsville, AL
59	2/7-2/9	Ed. Curric. Sharing, Ind. & Univ. Research	75-78	A18/PET	Greensboro, NC
60	2/8	Am. Library Association	71	G18	Owings Mills, MD/Austin, TX
61	2/11	Teleconf.-Offshore Oil Drilling	31	21	GSFC, MD/San Diego, CA
62	2/14	Am. Assoc. for Adv. Sci. - Annual Meeting	62	21/PET	Washington, DC
63	2/14	Adv. of Students in Science and Technology - Forum	68	21/PET	Washington, DC
64	2/23	IEEE	63	G18	GSFC, MD/LeRC, OH/Balt., MD
65	2/25-2/28	Continuing Ed. Conf.	54	21/PET	Indianapolis, IN
66	3/7	UM #20	EP-30	L18	LeRC, OH/ARC, CA
67	3/9-3/30	Shuttle - Remote Man. Syst.	EP-32	J18	JSC/CRC
68	3/17	Health Care Conference	89	21/PET/TET	Chicago, IL
69	3/23	Interview with Calio	EP-33	A18	ARC,CA/NASA Hq., DC
70	3/28	NOAA Teleconf.	95	21/I	Boulder, CO
71	3/30	MSFC Symposium	90	21/II	MSFC/LeRC, OH
72	4/10-4/14	American Indian Conf.	85	PRJ/PET/TET	Albuquerque, NM/ Crow Agency, MT/H18
73	4/24-4/27	AIAA	EP-29	24/PET	San Diego, CA/6
74	4/26	Teleconf. with AID	EP-35	L18	NASA Hq., DC/LeRC, OH
75	4/26	So. Baptist Conven.	83	21/I/II	Ft. Worth, TX/Nash., TN
76	4/26	Elementary Student Prog.	94	PRJ	G18/LeRC, OH/GSFC, MD
77	4/27	Teleconf. with Congress	EP-36	25/PET	San Diego, CA/Wash., DC
78	4/28	Teleconf. with AID	EP-35	L18	NASA/Hq., DC/LeRC, OH
79	5/3	Cal State Rehabilitation	99	A18	NASA Hq., DC/ARC, CA

UNITED STATES CTS DEMONSTRATIONS

NO.	DATE	EVENT	DEMO. REQ. NO.	EXPERIMENT	LOCATION
	1978				
80	5/8-5/10	Frost Prevention Teleconf.	93	PRG/PET	Disney World, FL/ GSFC, MD/ ARC, CA
81	5/10	Representative Fuqua	EP-37	25/PET	Disney World, FL/Wash., DC
82	5/12	Disaster Simulation-Balt. AP	87	PRJ/TET/6	Balt., MD/Albuquerque, NM/ San Antonia, TX
83	5/17-5/19	Family Symposium	81	7	Bethesda, MD/Seattle, WA/ Denver, CO/Palo Alto, CA
84	6/7	Asian-Pacific Conf.	72	A18	Wash., DC/San Francisco, CA
85	6/19-6/21	Am. Med. Assoc. Conv.	92	1/VA Mob.	St. Louis, MO/V.A. Hosp.
86	6/28	Teacher's Workshop	EP-44	L18-G18	LeRC, OH/GSFC, MD
87	6/28	Rep. Henry Reuss	EP-45	25/PET	NASA Hq., DC/Milwaukee, WI
88	6/28	AID Conference	EP-39	L18	NASA Hq., DC/LeRC, OH
89	7/6	State Legislators Conf.	EP-46	25/7	NASA Hq., DC/Denver, CO
90	7/8	Am. Assoc. of Schl. Admin.	97	21/TET	NASA Hq., DC/Minne, MN
91	7/8	UNICON Sci. Fi. Conf.	100	21/PET	ARC, CA/Silver Spg., MD
92	7/27	Rep. James Hanley	EP-47	25/PET	NASA Hq., DC/Syracuse, NY
93	8/10-8/15	River Control Conf.	107	PRJ/PET/I	Vicksburg, MS H18
94	8/17	Science Ed. Seminar	98	G18/TET/I	Buffalo, NY
95	8/24	Satellite Connectivity	EP-51	A18	ARC, CA/LeRC, OH Expt. 7
96	9/5-9/9	U.N. Tech. Conference	96	PRG/PET	UN-NY/Buenos Aires, Argentina
97	9/12-9/14	Am. Hosp. Assoc. Conf.	108	21/TET	Augusta, ME
98	9/14	Med. Interaction Conf.	116	21/TET	Hanover, NH/Augusta, ME
99	9/19-9/20	Joint U.S.-Can. Exptrs. Conf. & UM 21	112	PRJ/PET	Racine, WI
100	9/22	Shuttle Safety Mtg.	113	7	CA, MD
101	9/28	Info. Mgmt. Conf.	105	21/PET	Ann Arbor, MI/GSFC, MD
102	10/2-10/6	Student Space Program	102	PRJ/PET	Chicago, IL/LeRC, OH
103	10/9	Chicago Space Watch	103	PRJ/TET	Chicago, IL/LeRC, OH
104	11/15	Theological - Science Interaction Conf.	104	L18	LeRC, OH/ARC, CA/GSFC, MD

UNITED STATES CTS DEMONSTRATIONS

NO.	DATE	EVENT	DEMO. REQ. NO.	EXPERIMENT	LOCATION
	1978				
105	11/20	Mayoral Conf.	111	18G/PET	Columbus, OH/Balt., MD
106	12/10	Venus Encounter	121	A18	LeRC, OH/CRC, Canada
107	12/15	Teacher's Conference	110	PRJ/PET/TET	GSFC, MD/Purdue U., IN/ U. of Mich., MI
	1979				
108	1/6	Glassboro-Ames Teleconf.	122	PRJ/TET	ARC, CA/Glassboro, NJ
109	1/19-2/2	WAMI Rural Medicine	125	13/PET	Seattle, WA/Boise, ID/ American Falls, ID/ Helena, MT
110	1/26	WMVS Teleconference	124	21/I	Milwaukee, WI/GSFC, MD
111	2/6	Hospital Com. Net. Nurse Prog.	118	G18/I	Hanover, NH/LeRC, OH
112	2/8	NOAA Teleconference	126	G18/I	Boulder, CO/GSFC, MD
113	2/10-2/12	Nat. Translator Assoc. Demo.	127	21/II/PET	Denver, CO/Roundup, MT
114	3/1,3/22	Elementary School Teleconf.	131	PRJ	LeRC/CRC (Ottawa)
115	3/8	NOAA Teleconference	135	G18	Boulder, CO/GSFC, MD
116	3/22	EEOP Conference	EP/60	A18/H18	ARC, CA/GSFC, MD
117	3/24	Catholic Conf.	129	21	ARC, CA/VA Hospital Network (ATS-6 to Alaska)
118	3/25-3/29	Portage Public School	130	L18	Portage/LeRC, OH
119	4/4	Hospital Com. Net. Nurse Prog.	134	21	LeRC, OH/Hanover, NH
120	4/2,4/4,4/6	S.E. Oakland G & T Prog.	119	PRJ	Birmingham, MI/LeRC, OH
121	4/13	North Carolina Task Force for Public Telecommunications	139	21	Raleigh, NC/GSFC (Hq.), MD
122	4/16	American Journal/Nursing	128	21	Bethesda, MD/VA Network
123	4/18	Hearing Impaired Symposium	133	21	Lincoln, NB/GSFC, MD
124	4/18	U.S. User Meeting No. 22	132	L18	Denver, CO/LeRC, OH

A18 = CTS Experiment No. 18 at Ames Research Center
G18 = CTS Experiment No. 18 at Goddard Space Flight Center
L18 = CTS Experiment No. 18 at Lewis Research Center
J18 = CTS Experiment No. 18 at Johnson Space Center
PRJ = Project Office Headquarters
PRG = Program Office Goddard

I and II = Class I and Class II Terminals
EP = INTRA NASA
PET = Portable Earth Terminals
TET = Transportable Earth Terminals

SECTION 6

KEYWORD VERSUS EXPERIMENT NUMBER

Each experiment was given keywords that classified the nature of the experiment. These keywords were assigned by the authors of this report and are consistent within the entire report.

This section lists the keywords by experiment number so that the reader can easily identify all experiments that had to do with a given keyword. The keywords used apply not only to category of experiment, but other data as geographic location and type of satellite.